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Incident logged on 2024/06/23 2:12:06 PM (UTC 02:00) - Africa/Johannesburg; was resolved on 2024/06/25 9:20:59 AM (UTC 02:00) - Africa/Johannesburg Inbox csd@treasury.gov.za 10:21 AM (1 hour ago) to me Dear Tshingombe Fiston, We are committed to providing you with an EXCELLENT CUSTOMER SERVICE experience. We would like your feedback about the manner in which we handled your query/request. Click here to fill out survey Incident# 1900050 has been resolved: Resolution Kindly refer to email sent from csd@treasury.gov.za Incident # 1900050 Summary: CSD Registration Process Customer Name: Tshingombe Fiston Location: Priority: 5 Status: Resolved Category: CSD Registration Process Resolved On: 2024/06/25 9:20:59 AM (UTC 02:00) - Africa/Johannesburg Description Important: This email originated from an external sender. Please do not click on email links or open attachments you did not expect. When in doubt, please contact the ICT Service Desk. Re:/ award diplomat certificate,markshet transcript letter experience theoretical practical engineering n studies outcome Inbox tshingombe fiston > May 29, 2024, 6:26 PM -Address:postal. -Francis bard Pretoria Department of Higher Education and Training 123 Francis Baard Street, Pretoria Central Room 506_012 312 5440 To:St peace college and instituts, tvet Dhet -Date :subject :completion letter : Practice experimental log book. ____ -1. To concerne This letter serves confirm .Mr was participations in the work integrated learning programme of department : Dhet research assessment irregularity national examination nated n4 to additional information and workbased on visited circular practice external on line job work practice on department of energy minimal compagny career CVS and industrial portal council work city power day visited on line Facebook,Gmail badges,Eskom career day 28day appointment,sarb career engineering artisan electrical electronics engineering,Microsoft Scheiner career certificate training, Eaton electrical dtic day project engineering ,sasseta saps psira career mil engineering career metropolitan ,log back project isita DBE and participate assessment engineering electrical for n studies engineering n diploma national framework work qualifications NQF saqa subject research engineering electrical at St peace college 20days work ,circulum on line computer practice topics research engineering electrical at St peace college practice CVS computer aid .from 20 february 2022to 20 april 2024 in the area of engineering it expected following subjects. -Computer and information management system in education learn engineering assessment police and safety 1,and engineering safety security.class orientation guidelines./technical documentation libraries engineering learn. Outcome career subject entry irregularite time table revisit , irregularite career material illegal job material induction mentorship subject trading entry subject trade electrical theory , industrial electronics , mathematics, engineering,electrotechnic , industrial orientation science engineering drawing n1,n4,n3,n2,n5,n6,nstudie career experience exhibition electrician wiring panel,code ,generator power station transmission engineering subject irregularite career policing subject detective , business studies career ,advance field research electrical career lecture asssessor senior trade theories lecture irregularite engineering trade , module week material AC DC courent mesure instrument , exhibition career power station plant theory sum AC +DC machine +instrument measure to evaluate generator , transmission career job and advanced continued assessment framework qualifications compagny,summarise module subject math , engineering science draw . -1.1Section one ____ 1.2 Assist in the capture /profiling of job application career portal log activities on line internet project data development engineer path azure GitHub Microsoft autocad Autodesk Microsoft -engineering design analyse.kheta advice national career ,investigation system visual studio development.ms office . engineering electrical automate programmation computing trade theory assessment subject time table allocation topics.enginering drawing n autocad topics relate nated Eaton assessment 2.typing of memos and minutes exam papers topics assessment self assessment draw sharp table engineering electrical planing. 1.2.design of reporting template: tableexcell ups engineering electrical software. -management and training assessment panel wiring electrical -assiste with headling career filing . -capturing of career information system.database recruitment informers investigation electrical data source reports.career portal advices . -sorting distribution files information management system Education irregularite database system Portofilio. -allocated consultation and information record management system database assessment.engineering -handing inquired admnise communication skill , orientation industrial design template attandance registration on line form visual basic ,excell ms word . -relation labour handing of Portofilio survey interpretation status .. -duty monitoring assessment moderator asssessor engineering electrical n studies and level irregularite material suspension transcript marksheet years . Staff, daily staff delegation compilation of duty . -monitor -filing of retrieval of engineering assessment transcript record instituts saqa college topics project azure back log ..hrs practitioner.. ________________________________ 1.3.library and information service :sciebono career center and St peace college info class re rwiten "Engineering science career" , -research process : reseach method plan and disc ,collected and collected capture analyse collaborate and create management store preserve share and publish assessment textbook topic, monitoring and evaluation,emerging qualitative and quantitative missing text book engineering electrical. -research methodology engineering electrical topics vs research triangle.qualitarive methods quantitative methods ethnographic participate observations studies depth description engineering communication source data engineering ethnographic r group, participate research involving esearch case studies engineering electrical,source. -textual critical in social engineering,survey aim to provide overview, -experimental design laboratory controlled conditions physic psychometric technical ,field natural experimental design ,aim to provide a board of a representative sample of large . -secondary data analysis using existing data it aim. -conceptual analyse meaning of ward or concept clarification theory buildings on role building studies,literature review studies . -types of qualitative research design ground theory research narrative.hiatorical case studies and phenomenology design engineering field. -grounded theory is systematic procedure of data analysis typically associated.phenological studies design engineering electrical,case study research advanced field, -wath are research method in library data collection first is to choose a suitable methode for collecting primarily data depending reseach topics objectives methode interview observations and case subject.. -step of library research process identify and development topics do preliminary locate material evaluation make note ,rwiten papper ,import method for data collection ,survey quantitative interview library. .1.4.1.technical documentation in simple steps: business files and data during operation documents size store career control access keeps record and analysis career outline engineering step on line save download day part time learning. -consider a degree or certificate. -develoo skill on experience. -primairy :collecting record work clerk retrieved engineering career . -cataligi g data files and digitalise create file documentation organisation job engineering research analysis thing .technical knowledge soft ward .help desk technician types customer service , responding to customer support inquiries and documents feedback from customers .Google it support rating . -research faculty teach and learning research lab learning environment clinical simulation practice of simulation teach to develop outcome student team work communication self assessment, simulation base education la assessment,task training task oriented , simulation lab ,booking Education technologie, engineering science career electrical module engineering board -work purpose lab work conduct of experience,prepare work ,note book, of log book prepare rwiten engineering general format engineering, introduction theory procedure methode ,result vocational career trading guidelines. ____ 2. Section two. Department energy mineralogie compagni ,Eskom -related minimum experience. Technical experience and engineering related technologies, skill and competencies leader . -knowledge: relate technologie design codes and standards , engineering theory relevant processes ,police guidelines and legislation engineering design. -technical problem solving co technical cost analysis presentation. Key responsibilities , resolve complex integrated engineering problem variations integrate life cycle plan for . Provide special engineering,advice assistant manager engineering projects modification.perform technical and financial evaluation -Power Serie books on line research team future of power engineering lie experience engineering. Topics Application post :28days booking confirmation shared successful or unsuccessful.plant generation substation power station transmission metering post megawatts financial . -planing design construction of overhead power line principle system planning .insulation . _fundamental and practice of overhead line maintence . theory of overhead line management topics , implementation of work sole inspection -practical guide to outdoor council engineering high voltage characteristics electrical test specific flowchart inspector. -theory design maintence and life management of power transformer,theory principle and practices of design , fabrication overhead power line structure of towers moves and diagrams. -power line tower one testing . -transmission theory design and performance role ,in electrical design ,AC DC, ,hybrid,loss may , economic DC line conductor , conductor charge . -thermodynamic for students practicing engineering under thermo essential for power plant design and volume , outline key thermodynamics, Princit steam and plant compressor refrigeration plant entropy engineering to design thermal fluid machine theory to plant operating and new design is -applied system dynamics with south Africa case studies system methodology for studies manàge change over relief respect flow accumulation material control the flow industrial. -practionner and sustainable mentorship and coaching book - 2.2 .purpose career explanation : course customers training manufacture execution scheineder electric PLC introduction to PLC level 1, ecostruxure control exper programming level 2,intermediate introduction machine ,ecostruxure process expert hybrid process, supervisor control 2data acquisition software configuration workspace situation , network connectivity control ethernet io ,human machine HMI programmation, telemetry truo licensed radio remote connect , -motore control introduction to variable drives altivart process system ,low voltage electrical distribution l.v.e.d ,SPD ,surge protection device ,on demand. -low voltage low voltage distribution l.v.e SPD ,medium voltage permet set , medium voltage electrical distribution m.v.e, electrical novice , Ecostruxure power monitor expert power monitor project deployment -explanation diagram: note technical (Ups stream) , yes (USC %) ,=yes HV (transformer rating)=yes ,(power factor coincidence duty factor fore seable expense),(yes load rating). (Conductor charabke ,busbars,length, width, thickness,cables, type insulation, single core, length,cross section, environment,ambient temperature, installation method,number of,) Yes,,(ISc at transformer terminal)yes ,,ISC LV switchboard out goes)yes : (ISC switch board outage ,yes head of final switchboard yes),ISC end final), (breaking capacity,) yes(SST and install trip sitting yes) ,(breaking capacity yes , St and strip ,(breaking capacity St ms, final . -explanation: calculation impedance of power source the up streav network the power supply transformers as well as of the electrical lines Problem consider a 20kv network that supplies a HV / LV substation via 2 m overhead line and MVA generator that supplies in parallel the busbare of the same substation two 1000kva parallel connected transformers euply the LV,busbar which in turn supply 29out gears to 20 motor including the one supplying motor .all motor are rate 50kw all connections cable are identical and all motor are running when the fault occurs the isc3a d up value must be calculated at the variouse fault location indicated in the network diagram. -point A on the HV busbars with a negligible impedance. -point B on the LV busbar,at a distance of meter from the transformer. -Point c on the busbar of an LV su distribution board . -point D at the terminal of motor Mthen the reverse current of the motor must be calculated at C and B . up then D ,A ____ Upstream network U1=20Kv, SCC=500MVA , overhead line,3 cable ,50mm , copper length=20km, 2). Generator, 1MVA ,xsub =15%,t 3) transformer , 1000KVA secondary winding 237/410 ,USC=5% -mIn LV switchboard 3 bars ,400mm sqr /ph copper , length=10m, -cable @,3 single core cable 400mm aluminium spaced laid flat length =80m, -Lv sub -distri utilisation board neglected the length of the busbar, -cable ,3 single core cable 35 mm sqr copper 3,phase length=30m , -motore ---------------------- Drawing 1. -------------------- Reactance x and resistance are calculated with respective voltage in the installation relative impedance -solution : -- Section. |Calculation. |. Result x,R -- 20KV 1.upstream network|Zup=(29×10 exp3)exp2×10 exp 6.(1) Xup=9,97 zup (2) . | X(ohm) (R(ohm) Rup=0,2zup env 0,2 xup X=0,78 ohm R=0,15 ohm -- 2.over head line |XCo=0,4×2 (7) |RCo=0.018×2000÷50 X=o.8. R=0,15ohm -- 3.generator | XG=15÷100×(20×10exp)÷100. -RG=0,1XG -- 20KV fault A. X(m.ohm) R(m ohm) -- 4.transformer | Zt=1/2×5/100×410 exp2/19 exp Zt on LV side | XT ~ZT. Rt~ 9,2 -- 410v -- 5.circuit break | . Xcb =0,15 ,15 ,,0,15 -- 6.busbars one busbars | xB=0,15×10 exp -3 ×10 X=4,2, and R°0,84 -- RB=0,023×10÷400.. One 400mm .sqr bar X=1,5 m ohm R=0,5 -- Fault B 7.circuit breaker | xcb=0,15 R=0,15 -- 8.cable.1 One 409 mm cable Per phase |xc1=0,15×10 exp -3×80 | Rc2 = 9,923×30÷35....,, -- Fault c 9.circuit break ,xcb=0,15..... -- Fault D 11motor 50kw |xm=25÷10×410 exp2/5010.9×0,8)×10 exp ,3 RM=0,2 xm -- Impedance calculation : fault at A(HV busbars is to the generation XA=0,78+0,8~1,58 ohm RA=0,15+0,72~,0,80, ZA=√RA.RA+XA XA~1,89 ohm IA =20×10 exp 3 ÷√3×1,80~6,415 Peak asymmetrical ipA, RA÷XA=0,55,,K=1,2 IPA=1,2×√2×6,415=10,887A. -- Fault at B LV base (1,2,3)+(4,5,6)×R,,97 motor . (410÷20,000) Exp 2=9,42.10.exp -3 XB=[(XA.0.42)+4,2+0,15+15]×10exp -3 XB=6,51 m.ohm and RB=[(RA.0,42)+(0.84+0,57]× 10.exp -3 RB=1,77 m.ohm - fault D motor (1,2,3)+(4,5,6)+(7,8)+ XD=(XC+015+2,7)×10 exp -3=21,52m RD=(RC+19,2)×10 exp -3=28.2 m.ohm RD=(RC+19.2)×10 exp -3 = ZD=√+RD.Rd)+(Xd.xd) =35,5m ohm I'd=410÷√3×35,5× 10 .exp -3 ~ 6,700A RD÷XD=1,31 ,, K~ 1,04 104×√2×6,700~9,9000A XM=(605+2,7)×10.exp-3~ 140 ohm ,ZM = 624 m . IM=410÷√3×624 ×10 exp -3 ~,379A 20 motor ,IMC =7,589 A -ZB=√(RB.RB)+(XB.X.B=6.75m ohm IB=410/√3×6.75×10 .exp-3=35,070A. RB/XB=0,27 XC=(XB+0,15+12)×10 exp -3=34,7mohm RMD=(140/19+19,3)×10 exp -3~26,m ZMD=43.8m.ohm IMD=√410/√3×438×10.exp 3=5400A. 6.700+5,400=12,100A en and iPad ~ ,18,450A. -- Symmetrical, method 3phase network is unbalanced, magnetic cyclical impedance no longer , voltage -positive sequence , negative sequence. I3,I2,I1 ,we vector geometric construction. Labell -Fault estimated, 7,440×410/20×10 exp 3=152,5A Rough calculation.D Sum x = 4,2+1,5+12=17,7 mohm ,=xD Sum .R=7,2+19,3=26,5m ohm . Z'D=√(R'D.RD)+(x'd.xd) The peak iPad √2×7,430~10,500A. -- Peak asymmetrical 4.8 time their rated current of 98A: 10,500+(4.8×98×√2×20)=23,800A. -G=e. exp j.2π/3=1/2+j.√3/2.betwen ,I1,I2,I4,.. I2=a.a.I1+al1+I1 I1=I1+a.I1(2)+I1(0) I2=a.a.I1.(1)+a.I1(2)+(I1) .. calculation IEC , 60909>550kv., UN./√3fault -- Type.of short circuit| General situation ||fault occure -3phase .I|||ik3=x.un/√3.|z1) Zk°√Rk.k+xk.xk. |. I"k3=C.un/√3|z1. -Ze.=©©|Ik"=c.un/|Z1+Z2|| Ik"=c.un√3. 2|Z1| -- Phase to earth Zsc phase o |Ikez=CUn√3|Z1|÷z1.z2+z2.zo+z1.z2. - Ik2el2=Cub|Zo-aZ(1)÷Z1.Z2+Z2.Ze+Z1.Zo. Ik2EL2=C in |zo÷z1|-a ÷Z(1)+2Zo -____ UnQ=20kv IkQ=10kA. T(St. Cable In.,4m, in =400v, Sr=400KVA Ur THv=20kv. Urkv=4% Pkrt=4,6kw, R(o)T/Et= Problem network supplies transformation, Ik" peak short circuit,l=4m , 3×185mm,sqr Al ZL=(0,208+Jo,o68) ohm .km R(o)L=4.23, X(o)L=1,2. -- Solutions fault at F1, impedance of supply network (LV.) ZQt=CQ.UnQ÷√3.I".kQ×(ur.TLC÷urtHv)exp 2=1.1×20÷√3×10×(0,41÷20)exp 2= 0,534. -- Problem power station unity Stag=250 MVA,,,UrG=21kv ,RG=0,0025 ohm X"d=17%, XD sat =200%, cos alpha , ,art ,= 250MVA,, UrTHV÷Ukr=240Kv÷21kv,= ukr =15%, -- Impedance generator , X"d=x"d÷100×U.U.r.G÷srG=17÷100×21×21÷250=0,2999ohm ZG=RG+jx'd=0,0025+j0,2999 |ZG|=0,2999 ohm Srg> 100MVA, RGf =0,005x"d,ZGf=0,0015+j0,2999 KS=UnQ.UnQ÷UrG.UrG ×Ur.Ur×tLv÷ur×thv×Cmax÷2+|x"d-xt|sin alpha ZS=ks×(t.r×tr.ZG+Zthv)= 0,913(240÷21)exp 2×(0,0025+j0,2999+(0,479+j34,555) ZS=0,75+j67,313 Zsf=2,226+j67,313 I'm"s=CUnQ÷√3Zs=1,1×220÷√3(0,73+j67,313=0,023-j2,07s, |Is|=2,08KA Solutions. Tree phase fault at F1. -impedan e of transformer ZTHV=Ukr÷100×urTHV÷srt=15÷100×240×240÷250=34,56 RTHV=PkrT×Ur.Ur×thv÷srt=15÷100×240×240÷250=0,479 XThv=√z.zthv-rthv.rthv=34,557 ohm. ZThv=(0,479+j34,557) -3.section 4 . Purpose : Power explain hand book -basic network analysis /and advance field college. University explanation career -instrumentation , -DC motor and generator , -transformers , -three -phase induction motor. -single phase motors -synchronous machine. -generation of electric power. -Ovehead transmission lines on under ground cables . -stationery batteries. -electric energy economic method , -ligthing design. ------------------------------------ Label drawing resistor groups ------------------------------------ - explanation : serie -parallele DC circuit to be analysed:. Combine all Serie Req=R1+R2+R3+...+En DE=RB+R14=200+40=240 ohm ,Req, GG= R7+R8=200+400=600 .ohm , Req ,=, R10+R11==400R.=//. Req=R1//R2=R1.R2/R1+R2) G.G=R5//R6=(1009×1500)/1000+500)=600 ohm. Sum VD, E=VAB+VBC+VDE+VEF 460=60+100+50+120+130v -computw the current ,V1=VAB+I1.R1, VBC =V2=V3, VCF=E-(VAB+VBc)=460-(60+100)=30 IA=IT[RB/(RA+RB), IB=IT[RA/RA+RB, .. I5+I6=0,5/2=0,55=I5=0,25×(1500/2500) ____-- Explain draw Motor source -Id = Q c |VC|=1220 VAR (120v)=12 (0+j10,2).@ motor)=cos exp -1)×0,7=45.6 IM= 114.29 /_45.6 °=(10-j.10,2) IT=IM+IC=(10-j10.2)+(0+j10,2)=10/_0° 100 percent factor capacitor installed in switched bank to provide a range of of correction (S=P/cos)Teta=1200/0,7=1714. S/|E|=(1714VA)(120V)=1429. |.I| ×cos @=(1429A)(0,7)=10A. QL=|E||I|.√1-cos.xos /_, reactive power factor , QL=(120)×(14,29).√1-(0,7)×(0,7)=1714×√o,51=1224 VAR -Xc=VC.vc/Qc=(120)×(120/1224=11,76 C=1/wxc=1/(377)+1176=225,5 -- Purpose Explanation :Analysis of offset wave Calculation average V avg= Vdx=T T= period ,V avg =Vdx=[(12×1)-(8×1)]=2v Vrm,v = √area[VT.t]/T=√(12×1) exo+(8×1) exp 2÷2=√104=10.2 -superposition theorem effect 20vdc, VC reached it final ,(steady-state) value I=9,VR=I×R=0V,VC=20v ,effect of AC voltage (10.sin 377t) circuit ,XC =1/CW =1/(377)(660×10 exp 6)=4 ohm ,Z=3-j4=5/_-53° I=E÷Z=(0,707)(10)/_0°/5, /_-53°=1,414/_+53A I'm=1,414/0,707=2A, I=0+2sub(377t+53°) VR=I/R=(1,414/_53°)(3/_0°)=4,242/_53° VR=0+6sin(377+53°) VC=5.656/0,707=8. /_-37°, VC=5,656/0,07=8v VC=20+8 sin (377t-37°) V=√vdc .vdc +(vm1.vm1+....VM.vm)÷2 VM=|T|=√0.0+2.2=1441, |car|=√0.0+6.6/2=2,24 P=I.I×R=(1.414) exp 2×(3)=6v -Explanation : VR, 20 v , 10 sin 377t, c=660 W=2.π .f=(2)(3,1416)(60)=377.rad/s,,xL=1/(376)+26,5)×10 exp - 6 Z=R+j(xL-xc)=R+jxEQ,, XEq=xL-xc Z=√R.R+XEq /_ tan exp -1(XEq/R=|z|/-0,,Z=100+j(188,5-109)= √(100)(100)+(85,5(85,5)/100=133,5/_41,5° -E= VR+jvl-jv =VR+JVC,,vx=vl-vc -- --------- Label drawing -Explanation series parallel,RLC Serie parall Serie El,and RC ,,Z1,Z2 -I1=E/Zeq=100/_0° ÷1290/_224°=0,0775/_-22,° Current rule I2=I1.Z3(Z2+Z3)=(0,0775/_-22,4°) (100/$-36,9°)÷[500+j1200)+(800-j600)]=0,051/_-841°A,I3=I1Z2(Z2+Z3)= (0,00775/_-22,4°)(1300÷67,4°)÷(500+j1200)(800-j600)]=0,0709/_202° - Explanation.source =E=100v/_0°, load 1 ,P=200w,Qc=500v,, parallel load 2,pp=500w,QL=1200v,, Triangle Qxc=QL-QC=1200-500=700 S=√PT.PT+Qx.Qx=√700×700+700×700= 989,8 - explained maximum power transfer in AC circuit Label series , source E 9v/_0° EA/w.m=k.flux , (124,14)(0,32×10- exp 3 wb)=0,0397 3.4.1.explanation :calculate the speed calibration of the the voltmeter: EA/wm ,, I/0,0397=25,2 rad / ,IV ,speed of 25,2 rad /s ,2 π rad , calibration , 25,2/2π,,um /s ,I-V ,,,(r/s)(60/SM) 240 tr/Min Draw labell Field load Terminal voltage ,V t=Ra-ILRa=260,8-(40A)(0,4) ohm=2449 -armature induced voltage EA = 280v , at 1100r/Min , ea =(280)(950/1100)=242V VT=EA=Is(Ra+Rs)=242V-(630)(0,02+0,0045 ohm =224,7 - explain moment inertia j T= k2wo, k2=T/wo {(2.40nm)/(183rad/s)=0,013 Tacc=j/DW/DT, k2Wo=jdw/St. Integral x1=84 ,X2=0 dr= (j/k2). Integral , x 1=42 , X2=183 (l/w) dw [t] ,84 to 0 = (j / 0,0013) (ln w) | 42, to 182 -j=(84)(0,013)/(ln42-ln183)=0,742 kg -explanation calculation the time form dynamic breaking electromagnetic torque=K1.la, IA=EA/(Ra+Rbr).k2w+k1.k1 ×w/5.29 Or,St=(5,29jdw)/(5,29k2w+k1.k2) t=4,355 -- Drawing label ---------- -three phase scr drive for DC , scr calculation average values, equation ,Vag= (3×√3/2π)×V×cos s V=(440/√3)√2=359,3V S=40°,s Bag=0,827×cos,s=(0,827)(359.3)cos alph90°=227,6 S=45°, bag =(0,827)(359,3)(cos45°)=210,1 -conversion = 1100r/Min (πrd).m 60s=115,2 Const torque , - explanat ion Calculate torque ,T=K×la, (10hp)(746w/HP)/1208=35,9A T=(33,00/0,738Lb,ft=64 7 n K=I/Is=64,7N, m/35,9A)= ,1,8n.m/A -ea=kwm, EA =(1,8V are)(115,2rad) =208v,,EA=VT=la.Ra IA=(2276,6-208)/0,42=46, .T=k.la, 40°, T=(1,8Nm/A)(46,7a) 84,1Nm.,, 45° Fring an ,T=(1.8Nm/A)(5.0A)=9.N.m -- Analysis of a transformer connected to loan. 3.5-explanation calculation moment inertia , T= Armature=, poles (0,75)×(12,4la)=9,3 armature field current IL=(0,048)(41,7A)=2,0A R shunt field , RF = V1/If=240/2.0A=120 IA=IL+If=41,7A+2.0A=43,7A IA.Ra=(0,0061)/(240v)=14,64V, Is =43,7 RA=14,64v/437A=0,335 ________________________________ Full load IL motor ,IL = 5000w/240V=208 EA=Vf-Ra Is=240-(1.100ohm)(1.8A)=238V. -pro(loss)=EA.ia=(238)(1,8)=428,42 IL+If,, VT=240,,V=ea-Ra(IL+If) -starting IA=IL-If=20A-5,2A=14,8A Induced ,EA=V.t-la(Ra+Rat)=240 -(14,8A)(0,330 ohm+6,57 ohm)=137,9 V, -test stat restricted RST=(vt-ea)/la-Ra= (240v-137,9v)/34.8A-0,330ohm=2,60 ohm -ea= VT -la(Ra+RST)=240v-(14,8A) |I2|=(vA)/V2=100.00/240=416,67 I2=416,67/_-36,87° V1/a=V2+I2.Zeq2= (416,67/_-36,87°)(0,03059/_78,69=249,69/_1,952° |V1|=a|V1|a|=10×249.65=2496,5 3.7-explanation loss calculation. 10kva , transformer, 40w iron low ,160-w copper loss at full load efficient 5kva,80% Pcu,=I1.I1.R1+I2.I2.R2. Eff= pour/pin = pour/(pour+losses =Pour/(pour+pin+pcu =(Va load)(Of)[Va load) Of+of+pxu ,(Va load) n rating Efficient=5000×o,8)(500×0,8+40+16) (5000/10000 ,exp 2)=0,98 -level max efficient Pcu (KVA/ kV rating, Efficiency= p out (pour+pi+pcu) = 5000(5000+40+40)94 All day efficient , 24h trans. Loss is a total ,P.t (180×24)/1000=4,32kw, W cubtotal ,(1×1×620×8+0,5×0,5×620×5+0,25×0,25×620×7)/1000=6,006kw,,20h -wloss=50×8+50×1/2.5+50×@/4×7=612,5kw. --_-------- Explain draw Generator ,I1p connection I1 and I2 ,13kv, primary, secondary 138kv , ,load rated =50Mww,,delta start ,x1,n1 a=N1/N2=13.000/79,677=0,163,.I1s=a.I1.p√3=(0,163÷2221/√3=209... Load { total KVA /√3=80kva/√3=46,2Kv -46,2kva/40kva×100%=115,5% =√3×40=69,3 =69,9kva/120kva,x100=57,7 ------------------------------+ Delta Delta connection,80 kV /√3=26,67kva,load ,=KVA, = 46,2kva/26,67kva×100=173,2% --_ 3.6 Explain phase induction motor , I1,r,1x 1, RC,XM ,E 1, v,1, i2,X2, E2,R2/s. equivenlent diagram Solutions. 1.fulk load shaft power = 15×746=,11,190 w mechanical power development (pm)=,shaft power friction ,I1,R1,X1, RC ,XM, I'2-I2/a,x'2=a.a,X2,R',R'2/s(1-s), R'2/s=a.aR2/s Pm=11,190+820=12,010w. 2synchrouna speed (Na)=f/p, Ns=60/2=30×60=1800 r/Min Slip(s)=(ns-n)/Na S=(1809-1710)÷1800=0,05 Air gap power (page)=Pm÷(1-s) Pafg=12,010/(1-0,05)=12,642. -rotor copper loss (pcu.pcu)=SPG Pcu 2=0,05×12642,1=632,1 -no load test f=60hz,V=229,9,v =6,36A,P=5/2w, -locked rotor test F1=15hz,v=24,I=24,06,P=721w, -locked rotor test at f1=60hz, I=110A,P=27,225w Aveg,wind resis stator terminal=0,42ogm No load test |Znl|=VNI÷√3.INL=229,9/(1,73×6,36)=20,87 ohm Rnl=Pnl/3nl=512/(3×6,35 exp 2)=4,22 ohm Znl=√|znl| exp 2-Rc .exp #=√2a,86. Exp #-4.22 exp 2=20,44 ohm Lock rotor test , Zin=V÷√3.I=24÷(1.732×24.06)=0,576 ohm -R1+R'2=P÷3.I.I=721÷(3×24.06.exp 2)=0,415 ohm X1=X'2=√zin.exp 2-(R1+R'2)exp 2 = √0,576 exp 2-0,415 .exp 2=0,404 ohm To determine leakage ,60hz, XL=(60÷15)(x'1+x'2)=60/15×o,403=1,616ohm X1=0.3xl=0.3x1.616=0.485 ohm X2=0.7xL=0.7xL=0.7×1.616=1.319ohm . magnetic react XM=Xnl-x1=20.44-0,485=19,955 ohm , PG=pnl-3.i.R1=27,225-3×110 exp × o,21= ,=19,602 w ------------------- 3.7 Explanation: -3÷188,5×(241,2)(241,2)×0,2÷1=185,2Nm -R2'/S=0,2/0,0333=6,01ohm, Z1=(0,25+j0,15)+(j30)(6,01+j0,5/6,01+j30,5)=0,25+j0,5+5,597+j1,596=6,2123/_19,7° -Ifl=265,6/6,2123/_19,7=42,754/_-19,7°A It's/IfL=245,9÷42,754=5,75, of =cos (19,7°)=0,94 log -T=3÷188,5×+(261,3)(261,3)÷(0,49+0,5).exp ×6,01=163 , NM Pag=Two.sin =163,11×188,5=30,746,2 -Rotor copper loss: P2=sPag=0,033×30,746,2=1033,9w P mech =(1-0,0333(×30.746,2=28,7223 Pour=Pmec-p rot=29,7223-1700=28,0223 Pin=3×.V1.×I1×cos flux. =3×265,6×42,754×0,94=32,0024 Eff rotor = 28,0223÷32.022,4×100=87,5% -effinte =(1-s)=1-0,033=0,967=96,7% STmax=0,2/((0,24)(0,24)+(0,49+0,5)exp2)exp 1/2=0,1963 Tmax=3÷2×188,5.[(261,3)exp 2÷0,24+(0,24)(0,24)+(0,49+0,5)exp .2)exp 1/2=431,68N.m -Tmax ÷TpL=431,68/163,11=2,65. STmax=1-(R2/(Xm+X2)=1-(0,58÷(2,6+0,271)=0,98 Breaking -- Labels Drawing ------------------- WS=2πf/P=(2π×60)÷2=188,5 rad/s TL=Pg÷ws=19,602÷188,5=104N.m Resistance reactance. R'2=(R1+R'2)-R1=0,415-0,204 .ohm R=P÷3×I×I=27,225÷(3×110×110)=0,75 ohm X=√z.z-R.R=√1.207×1.207-0,75×075=0,95 .ohm X'2=X-X1=0,95-0,485=0,465 ohm -Rotor at start RfL=R-R1=0,75-0,21=0,54 ohm -IEEE..test for empire Reactance rotation|sQuire cage design|w X1/XL : a 0,5: B;0,4;c 0,3;D 0,5 X2/XL ____ -Performan e characteristics Tech=1/w×3.V1.V1/✓R1+(R'2÷S)]exp 2+(X1+X'2)=R'2÷S -AT low value of slip Timex ~ I/was 3V1.v1/R'2×s At .value of slip . Timex ~I/Was.3×V1×V1/(X1+X2)exp 2=R'2/S - Tmax = 1/2ws×3×v1v1/R1+√R1.R1+(X1+X'2) -stator core rotor friction and wind , Loss ,Pag ,pin Elec ,pmec ,windage loss ,P out mec,stator resi loss (3.I1.I1.R1) -3phase I.a.V1=460×√3=265,6 V ,start ,S=1,the input impedance, Z1=0,2+ -j30(0,2+j0,5)/0,2+j30,5=1.08/_66° The starting current It's=265,6÷1,08/_66°=245,9/_-66°A. Wayne=1800÷60×2π=188,5rad/s Vth=265,6×(-j30,0)÷0,25+j30,5~261,3V ZThv=-j30(0,25+j0,5/0,25+j30=0,55/_63,9° =0,24j+j0,49 Rath=0,24ohn ,XTh=0,49 ~x . It's=Pag÷wsyn=I2.×2R'2/S÷w.a =3÷188,5×(261,3) exp 2÷(0,24+0,2)exp 2(0,49+0,5)× 0,2÷1= 3.9-explanation: . 1.select base value: VA base =150MVA, vbase =13,8kv,,fbase = 60hz,value base, 2.calculate RMS stator phase current base ,Is base , Is (base) = (MVA base ×1009)(√3×Kv base)=(150)(1000)/√3(13,8=6276A, 3.)calculate peak stator phase current base ,U base , I (base) = √2×Is(base)=√2)×(6276)=8875A. -4) calculat statore base impedance Z, ,base ,ZS (base)=KV..base / MVA base =13.8)exp 2/150=1,270 ohm 5) calculate base inductance ,La (base , La (base) =ZS=(base)/Abase=1270/377=3,37×10 exp -3 6)calculate field base impedance Zfd(base) Zfd ,base = (Lad/LAFD ,base =(0,0056÷0,0138)×8876=3602A. 7)calculate field base impedance Zfd (base) Zfd(base)=MVa base ×10 .exp 6÷id(base ,=150×10 .exp 6 =11,56 8)calculate field base inductance Lfd (base) Lfd(base) = Zfd (base /w base = 11,56/377=30,66×10.exp-3 H 9) calculate field base voltage ,EF d base 10).calculate direct axes armortiaeur base current current is ks (base) lad / laks is base , =(0,0056/0,0054)+8876)=9204 11)calculate direct axis armortiaseur base inductance. lkd(base)=Zkd(base)/wbase=1,77/377=4,70×10 exp -3 H I Zk , direct axis armortiaseur base current -12,). 1kd (base)(load/laks)(base)=(0,0056/0,0053)(8875)=9204A. 13) calculate quadrature - axis armortiaseur base inductance ,L,kq (base) Lkq(base)=Zkq(base)/wb=1,77÷377=4,70×10. Exp -3 -350×10 exp 3 W-(399,8hp)(746w/HP)-44,186w=7563 -calculatiin of efficiency because =+399,8hp)(746w/HP)(100%)/[399,8hp)(746whp)+44,186wt, 7563w]=85,2% -calculate counter ,EMF (Tuvr)-(resist volt drop) -(reactive voltage ,240 /_0° (1580/_-38.1°A)(0177 ohm)-j(1580/_-38/A)(0,046 ohm) =240-22.0+j17,3-44,9-449-449-j57,2=173,1j-j39,9=177,7/_13° -14 calculate quadrature axis armortiaseur base impedance L.kq(base) Lkq (base) = Zk(base)/wbase =2246/377=5,96×10 exp -3 16.calxulate base mutual inductance between armortiaseur and field Lfd base ,Ifk base = (ifs(base) / ikd (base) Lfd (base)= (3602/9203)+30,66×10 exp -3)=12×10 exp -3H 17. Calculate base flux linkage flux ,base . Flux (base) = La (base) is (base) = (3,37×10 exp - 3) ×8875=29,9wb -calculate base rotation speed in r/term , Base speed is 120 f base ,IP = (120)+60/2)=3600r/Min -calculate base torque ,t base , T base = (7,04 MVA base × 10) minimum base , = (7,04)(150)(10 exp 6) ÷ 3600=293 ,kLb ,ft (3972 kn.m) ____ Calculate per - unit base Quantitie for a 150-Mva ,13,7kv,60 Hz ,3 ph two pole synchronisation machine following constant axis mutual inductance between, Inductance between stator winding a and rotor ,L AFA = 0,0054H ,Q axis mutual inductance between rotor stator winding a and q axis armortiaseur,Lakq= 0,0963 H ,the per unit system and denote rotor -calculate procedure: 1. Determine the speed at breakdown torque synchronous in speed is calculated from the equation n,sync= 129 f/p , r/Min where ,f frequently,in Hz and ,P= number of poles this) synchronisation=120(60)(1800)×4 ,at the point where the torque in percent breakdown torque is 109,the speed in percent of synchronisation torque is 100,the speed %, of synchronisation speed is thus the rotor ,speed is not= 0,80 synch=0,80)×(1800)=14400trm -calculate the hors power at breakdown The general equation)+HP Min) /33,000f.t,lb=(torque in lb, ,n rot in r/Min)/52521 ; 16°z,,Lb , 13 in = ift -ho = (torque in o in) (n rot ,r/Min)÷1,008,403,2 HP=(torque in o .in)(n rot in r/ Min)×10 .exp -6 break down, HP = (10,50z in) (1440r/ Min) ÷10 exp 6=15,12÷10 exp -3, how = 1512 .. - repulsion motor , 24 slot the armature , Slot ° (24)+2)=48 coil ZR=(3,5×10 exo -3 WB)(576 conductor)(3600r/Min)(2poles)/√2)+60hz, (2pharh)=85,5 -calculate the AC impedance of the rotor circuit. -inductuve is calculated XL=WL=2πfL. Frequency,L=inductance,XL=(2π)×(60)×(36×10.exp-3H)=13,5ohm Impedance of the rotor circuit is R+jxl=2,7+j13,6 ohm =13,9/_78.8° ------------------------- -IK,R,JXL,VL,, Flux magnetic properties T=K.flux.il..kflux , T state /IL=2,3N m/3,6A=0,639wb IL=VL/Z=120V ÷ 13,9=8,63A -3.Calcul the AC starting torque T=k.flux.IL, T start , ..k.flux.il=(1,53wb)(8,63a)=132. 4) calcul counter efn EA=VL-IL.Z..IL..to , 85% first càlcul -j48.1=|20.7/_-240V, repeat IL,24°, EA = 120°/_0°-(3,6/_-24°)+13,9/$78,8°)=120-50,04/$54,8°=120-28,8-j40,9 =91,2-j40,2=99,95/$-24,2, -24° remain Pmec=EA.iL=(99,95)(3,6A)=359,8w -VL lag VL, of ° cos 24,2°=0,912 from information , Pmech = VL×IL×cos-coppwr loss = VL×IL×cos-IL×IL×R= (120v)(36A)(0,912)-(3,6A)(3,6)(2,7)=383,97-3499=359 359.8w. VL=120/_0°. ____&& Drawing label Phasor diagram motor universal : ea°99,95/_-242°V, |IL.R|=972V. IL°3.6/_-24,2° --------_____________ Repulsion motor drawing diagram 3.9.Explanation, -J√3.V.V/XD. roduis ,is RF=√3.√Emax /XD= √3(10)×(1,85)÷1,78=1,8p.u V=I.××o×p×u, Local , o (-10×√3)÷1,78=0,-j 9,96 -3 calculate steady state. Jv2÷2(1xe-1÷XD)=J/2(I÷0,4-1×1,78)= J.o.96. RL=roduis =V2.V2(1÷Xe×1÷xd)=1÷2(1÷0,4+177)=1,53pu. - 3.10 explanation: GENERATION REGULATION: -Ea=0,00219,power factor =0,975 ,zero -Calculate potier reactance,XP So=E+√3×la×xp , from zero power factor,.Eo= voltage at not load E,I,S. Terminal , voltage in RD= RE+DE,, DE=√3×la×xp XP= Is xp÷(VLL÷√3)=D.E÷VLL=DE÷RE=0,43Pu, EP=1,175Pu. -power output and power factor. Calculate the maximum output ,power for an excitation increase of 20% for a 13,8KV ,eye ,connected generator having a synchronous impedance of 38ohm phase it is connected to an infinite bus and delivery ,3900A ,at unity power factor , -1 drawing phasor diagram, subscription indicate initial conditions , voltage vs ,the line -to-neutral Angle and between the phase voltage and phase current. 2 .calculat voltage behind synchronous reactance E=(1X,)+1X)-V.V] exo 1/2 = [3900×3,8÷1000) exp 2 -(13,8÷√3)]exp 1/2=14,54 KV 3.calcul maximum power Pnax Pmax=3.E.V.I.X ,,sin§=1 for maximum Power ,20% higher excitation. Pmax = [(3)(1.2)(14,53)(13,8÷√3÷3,8=110MW -Calculate power factor, Flux =E.I÷Xs=14,53÷(3,9)(3,8)=0,97 -per unit Quadrature axis reactance calculate the synchronous and substrasient per unit reactance for the quadrature axis of the machine in the first , additional data ,for the machine are ,q-axia armortiaseur ,self inductance L,K,Kq=0,0107H, and the ,q-axia Lak = 6,3×10 exp -3 , -calculate ,Law From value obtained in the two previous, IQ=Lq/La(base)=0,0058÷(3,37×10 exp -3)=1,72 pu. -calculate .IQ L.q=Law+L1=1,72+0,12=1,84 Calculate ,Lkkq and Lakq. L.k.kq=L.k.q÷Lq(base)=0,0107÷(5,96×10 exo -3)=2,80 Pu , IA.kq÷(La.base)+ base) ÷lkq(base) =(6,3×10 exp -3)÷(3,37×10.rxp-3)(8876÷8172)=2,72pu 4) Calcul per unit value of q-q ,axis armortiaseur leakage inductance ,lkQ ,1kq=1k.kq-lLq=180-1.72=0,08Pu 5).calculate per unit transient inductance. Lq=Law.Lkq÷(Law+Lkq)+L1=(1,72)+0,08)÷(1,72+0,07)-0,12=0,195 Pu - calculate if and ikd The quantity are ,ifd rfs ,Zsd (base)= 0,0072÷11,56=6,23×10 exp-4, and lkd= rkd÷Zkd base ,= 0,028÷1,77=0,0158pu -calculate field open circuit time constant,T,ok T'd=Lffd÷lfd=1,74÷(6,23×10 exo -4)=2793,Pu -calculate: substrasient open - circuit time constant, I" o/o=(l/lko)(Lkd+lfd.ladπlfdd)= (1÷0,00157)(0,19+(008)(6,66÷1,741)]=16.9Pu -Calcul per unit transient and subtransion short circuit time constant for the direct axis the direct axis armortiseur leakage,time constant , -calculate per unit transient short circuit time constant ,Ta T'd=(l/FD)[Lfd+Li.los÷+Le+Lad) [1÷6,23×10 exp -4)(0,08+(0,12)(1,66)/(0,012+166)]=308 -Calculate per unit substrasient short circuit time constant ,T" oO 1÷F.kd×[Ln+1÷(1/Lad)+(1/Lfd)+(1/L1)] =1÷0,00158×0,19+1÷(1÷1,66)+(1÷0,08)+(1÷0,12) - 3.calcul per unit armortiaseur leakage time constant ,Tkd, Tkd=Kkd÷lkd=0,19÷0,158=12.pu l/w(base)=1÷377, Y=T÷377 -phasor diagram synchronous generator 1.determine If the Va and V base value are equal to the machine rating ,Is base = (MVA)×1000)÷√3kv=(100)(1000)÷√3)(13,8)=4184 ,base voltage a ,13,8 kV ,per unit RMS , terminal voltage ,is Ei=1.0 Pu Per unit peak voltage Teta = U.O/$0°.P.u will be chosen ,phasor 2) local ,q- axis , EQ=|EQ|/§ machine internal power angle. EQ, ,,Eq° a+ j(r+ jxq), but ju = 1.0/$0° Pu,where, Teta = cos -1 , 0,8 = -36,9,,,EQ=1/_0°+1.0/_-36°×j1.84=2,38/_35° Pu power angle ,×=35° - Calculation a frictional ,EQ=|EQ|/s. -ea=|a|cos§=(1,0)(0,819)=0,818pu ed=|a|.sin×=+1.0)(0,573)=0,574 .Pu and Jq=|j1|.cos(§-teta)=1×0×cos(35°+36,9°)=0,311 ,Pu JD=|j|.sub(×-0)=0,951.pu -voltage ,E1, Q axis represents. E1=Xad,j+d=eq-xd.is+rid=0,819+(1.89)(0,951)=257pu - explain, Generatie - capabilities curve : generator , supa ability curves , supplied the manufacture is used to determine the ability of generator to delivery real (Me) and reactive ,(MVar) power to a network determine the capability curve in per unit value of a generator -characteristic : 989 KVA ,of = 0,85 synchronous reactance ,XD = 1,77 Pu , maximum value of generator internal voltage ,Emax =1,75 p.u terminal voltage ,V= 1.9 Pu ,§= load angle and the system reactance external to generator ,is XE=0,4 .p.u -calculate stator limited portion stator ,limited is directly proportional ,full power output ,arc ofa circle medium ,Rs=1,9 p.u - calcul field - limited,P=(3×V.Emax/XD) Sin§+j(√3.×C.E.max÷Xd.cos§-√3.V.÷XD) Explanation:-Generation rating for installation:-generation rating in MVA = turbine rating in MW /power factor,generator for 600-MW=rating 600Mw /0,99=677MVA.-o 3.11 Explanation: calculate generator output ,P Po= √3×KV×IA×pf=(√3)(25)(28.000)(0,975)=1.182,125kw -calculate generator officiency Efficiency=power out put)÷+power output+total losses) =1.182,125÷(1.182,125+10.910=0,99 -calculate synchronisation coefficient at rated load for the following generator : 75.000kw , terminal voltage ,V=I×o×p×u, armature current, IA=I×p×u, Quadrature axes reactance ,X2=1,8 ×pu× Of=0,80 lagging , neglected the resistive components of armature - calculated rated load angles § The angle §=tan .exp -1.[xq×cos$×la÷(la×xa×sin$+V)] Tan .exp-1[1.8)(0,80)(1.0)÷[(1.0)(1,89)(0,6)+1]=35° -calculate synchronising power coefficient,Pr Or=(rates kW)÷(rates load angle × 2π÷360)=(75)(1000)÷(2π÷360)=122,780 kW/rad. -- -Generation efficiency: Determine the efficiency of generator having the same basic characteristics of the generator in the generator regulation additional data including armature full load current ,IA=28.000A ,core and short circuit losses a friction and windage ,loss ,500Kw ,from drive rotor input ,armature , resistance ,Ra=0,0011ohm phase excitation voltage a rates ,470C, excitation current for air gap line 3200A,and output voltage ,25 kV ,compute core loss from and the potier voltage So=1.175 ×p.u, loss 21000kw -determine short circuit loss for 1.0 Pu line current ,short circuit loss =4700kw -calculate stray current loss ,stray current ,loss =short - circuit ,loss , armature,loss =4700-862=3838Kw - calcul power for excitation power for excitation=field voltage ×IfL =(470)(2,4)(3200)÷1000=3610Kw, IFL - Determine e total losses : --friction and windage : 500kw Core loss. : 2,100kw Armature copper loss. : 862 kW Stray current loss. : 3,838kw Power for excitation. : 3,619kw Total losses : 10,910kw -- -Explain: Generator grounding transformer and resistor. -determine the size of a transformer and resistor required to adequately provide a high resistance ground system for a Wye, delta start connected generated rated 1009MVA ,26KV ,60GZ,in addition generator capacitance= 1,27 ,if man transformer capacitance =0,12 if ,generator lead capacitance= 0,01uf and auxiliary transformer capacitance = 0,024uf -calculate generator line -to -neutrak voltage ,VL- N=(26kv)÷√3=15kv -calculate total capacitance ,CT CT=to+1,27+0,12+0,01+0,024)if=1,424 uf . - calculate total capacitve reactance ,Xct XcT= 1÷2πfcT=1÷(6,28)(60)+1,424×10 exp -6)=1864 ohm -select ,R= XcT to limit transient over voltage during a line _to_ ground fault assume a 19,92÷0,480Kv Transformer the resistance reflected to the primary ,is .R'=N.N×R, R' is the requirements resistor ,solve ,R=R'B.N ,,, B= 19,92π0,480=41,5 R=1864÷41,5 exp 2=1,08 ohm -calculate transformer secondary voltage ,Vs during a line - to - ground fault ,vs = Vs = 1500÷41,5=361V. - calcul current Is , through grounded resistor ,Is° Vs÷R=351÷1,08=334,3A -calcul required continuous rating ,in KVA grounds transformer rating is KVA ,= I,V, = (334,3)(361)=120,7kva. - sele - explain:selected short time rated transformer from ANSI standards ,a50 -kva transformer may be used 9 Min , rating is adequate, -calculate generator line -to -ground fault current ,If , if = V/XcT =15.000÷1864 =8.05 - Power -factor improvement. An industrial plant has a 500-hp induction motor load a 4000V, with an average power factor of 0,8 logging ,and a erage motor efficient of 90% ,A new synchronous motor rates at 3000hp is installed to replace on equivenlent load of induction motor the synchronous motor efficient determine the synchronous motor current and power factor for a system current if 80%od the original system and unity power factor - calculate initial system rating KVA The rating is KVA=(HP /b)(0,745/of)=(500/0,8)/(0,746/0,8)=518KVA,,n efficiency - calcul initial system current I o Io=0,8Ii°(0,7)(746)=597A -neq induction - motor ,I1 I1=0,746 hob/.√3.n.pf =(0,746)(200)/√3(3)(0,9)(0,8)=299A, - cal synchronous - motor power factor ,- PFA = 3588/40/1=0,895 -calculate synchronous motor power factor PFA , PFS = 358,8/401,1=0,895 Related calcul verification synchronous rotor horse ,3000hob,,,ho's=3×V×I×n×pf/0,746= (√3)(4)(401,1)(0,895)/0,746=3000hp - me - 3.14. explanation: design calculation: autotransformer starting; Labell drawing: --------------------------- Alpha= voltage tap = VLA ÷Vs ILA= alpha / LA = motor , ILL=alpha /ILA= aloha K1= Line current for = Alpha, I1+0,15In for (a) motor torque -ZL= total input impedance ZL=motor impedance Rs=starter resistance ILR=motor current . ------------ Motor locked rocked rotor resistance ILR=VLR÷ZL=alpha.VL÷ZL=IL |Z×IL| I=I×RL+jxl, I=VL÷IR=VL÷alpha×IL =(Z/alpha) Ohm -RiL=Rs+RL=√Z exp 2×IL- XL.exp 2 R.S = (RiL-RL) Of = cos (Teta) = RiL + ZIL -multi step starrting : . drawing: R'2/Smart/ -Rx1=Rmax -Rx2=S1.R2.Rx4=S1.Rx3 -Rx4=S1.Rx5 rx1=Rx1-Rx2= Rx.z=rx2-rx3 Rx3=-rx4.. -speed control operating supply, Tm1÷Tm2=S1÷S2÷4 Tf1÷Tf2=N1. Exp2/n2 .exp 2 =(1-s1) exp 2/ 1- S2) expb Impedance motor XL=WL, r+jxl, T= k ,flux,L,, T = k.flux -Po=√3×Kv×A×pf -e valuation of annual O ,M cost Vs installed capitals cost -- Cost component | unit A. | Unit B. -- -Net unit heat rate .|10,55 MJ/kWh| ..-/- -unit availability. |10.00 but kWh| -/- -unit rating. | 95%| -/- -installed capit cost| 600Mn| -/- - levelized average | 18.00 % | -/- -for annual fixed Charge (9450×10 ,exp)(118/100)=18709×10.exp ,6 Annual fixed charge Annual cost used for compare --

91,69×10 ,exp 10 ,exp 6 - cost penalty -- -3.14. Explanation :Overhead transmission line and under ground cables : -calculate flux one conductor -Inductive impedance © ©. © - transmission line geometry portion Diagram . -effect of mutual flux line. - charge two conduct . ..Is , RK, K ,IR Long lines Vs = VR+IRZe),expb+(VR-IR-Ze)e .expb along Is=+VR/Zc+IR)exp + (VR/ Ze - IR) ,exp ,e - alpha e Zc= √ Z/y- ,, propagation cost ,, Alpha = = √ Z.y , per kilometre . - calculating sending voltage for (200 m transmission line receiving to - line voltage ,is 239 kV ,and the is 200 at power factor ,0,8 logging promote ,R=0,2 ohm , L = 2 MH , C = 0,01 if , f = 60 Hz Determine YL , and ZL , .TL = hw × CL × 1/km .1=jb×77(0,01)(19 exp -6)/km×320km= j.1206 micros sub(micro second) ZL=RL/km×1+XL/km.×1=0,2 ohm/kn(329km)+377(2)(10 exp -3) ohm / km × 329 km =-6,4+j241,3ohm -capacitance of two wire line : E=P×L/2 -Capacitance of two -wire line E=P×L÷2×π×€×r Vab=(resistivity ×length÷2×π×€) Ln(b÷a) E=(resistivity ×Length÷2×π÷€)[1÷r-1÷(D-r)].V/m r>a ,center -V1.r=(resistivity ×Length÷2×π×€)In[r(D-a)÷a(D-r)].C -D>a ,V÷2=(resistivity ×Length÷π×€)Ln(D÷a)×V -C'=q÷V,, Q= resistivity ×length ,, C=C'/Lor,C ,,π÷Ln(D÷a), f/m -find capacitance to neutral for conductor transmission line ,if = D=8ft×(2,4m),a=0,25 in (0,0°625) Length of line is @0m.(16km), frequency is 377 Rod -ZC=1÷w×c , substitute for ,X=0,0388 ,log (D÷a) obtain -XC=1÷(377)(0,0388)(@0)÷log (2,4÷0,00625)]=0,0026 M, -phase quadrature components ,start motor , VL= 120°/_0°, phasorw locked rotor ,Is=8,4/_-145° A=8,13-j2,10A , similarly In= 12,64/_-40,0° ,A = 9,69-j8,18 In phase = 8,13+9,69=17,82A Iquad ,= -j2,10-j8,13=-j10,23A I star= 17,82-j10,23A=20,55/_29° Pfact start = cos 29°,86=0,867 T,start = k.Im.sin.a =(0,18V,s/A)(0,4A)(12,05).sin 25 =8,46V ZA=Za×bZ×Ca÷Zav-Zbc+Zc Zb=Zab.Zbc÷Zab+Zbc+Zca Zc=Zbc.Zco÷Zab+zbc+Zca ------------------------------- Zab=Zab+ZbZc+ZcZ2÷Zc Zbc=Zazb+Zb.Zc+ZcZc÷za Zca=Zazb+Zb.zc+Zc.iz÷zb ---------------------------- (Xa.zb+xb.xc+XC.xa)÷xc zbc=(xa.xb+xb.xc+XC.xa)÷xa XB.xc+XC.xa)÷xb Xa=Zab.xca÷xab+xbc+xca XC=xbcxca÷xab+xbc+xca ---------- Labell Generator ,12,2 kV, x"=0,19pu,50.000kva Motor 1: 30000KVA,X"=0,29per ,,4,2kv Motor 2: 20.000kva,X"=0,25. , 2,2 kV -tfo : Primary : 13,2kv,: 50MVA,,, Secondary: 4,2kv, 30MVA,, Tertairw :2,2kv,,20Mv ------------ Label ,R'j0,68,,,L2=10,012; ,j0,002, equivalent,0,034 Correct motor reactance ,X" motor ,0,2 base ,30.000kva , 4,2kv, (0,20)(50,000/30000)(4,2/13,2)Exp 2=0,034Pa, X" load 2, 20000Kva , 2,2kv (0,25)(50,000/20.000)(2,2/13,2).exo 2=0,017 Calculation of complex power ,P+jQ Balanced 3 phase, .. 5.0/_-37°, line voltage ,is 69/_0°,per unit base of ,10000KVa and 72 kV,, - design drawings , .lx. Matrix |0. 1. 1 | |1/_60°. 0. J | |1/_120° -1. J| _________________=0,863/_191,67° |1. 1. 1| |-1. 0. J| |0. -1. J Explanation-Electric -power network 2generator. // :13,2kv , and ,13,2166, sending bus ,6,6kv ,,Tertia ,transfo motor , 7,5kv , and transfo 66 kV /12 kV , output ,6motor M1,M2,M3,M4,M5,M6, 0f 12 kV parallel ,, Labell , circuit generator with tree impedance Serie ,j0,101,,j0,03, j0,10 line and transfo two motor Ma,MB ,impedance ,j 0,222,,,h0,333 ______________ Explanation Generator 1=40.000kv, 13,2kv,,X"=0,20 Generator 2=30000kv, X"=0,25 Pu Transformer=75,000Kv , 13,2kv,, 66,kV, x = Pu _________________ Calculate , impedance :3000kva , Jxtotal=(j0,15)(j0,25)÷(j0,15+0,25)+(j0,04=0,134pu ________________ Generator react . X"=(0,25)(3000/300000)=0,24pu 30.000kva,, X"=(0,25)(75,000)/300000=0,625pu Transfo reactance , X=(0,1)(30,000/75.500)=0,04 ohm py 30.000kva ,base 3.14. -explanation: Phase shift in Wye Delta.H2=B,, IBH2=A,IA,IAn,,,Generator GA ,line ,motor 0ne,ZB=0,6+j0,77 GB -ZA=15+j1,5 ohm O=√3.E/ne.IL×cos,P=E×I×cosIA=PA÷EA×c -explanation: -Bus iV^,, Is, Vs,, Vy^, bus j ,,I pi,you, IPS ,, -find slack bus power PG, ,i-j Yn=Is+Ipr(v1-vy)ys+V1.p1 -Power, Sn=Pn+jQn=V1.In=V1(V1y-Vj)y+|y1|.y1|.yP1. Sjn=Pjn+jQj=Vy.Iy=By(V1x-V1)us+|Vy|.yP1. -Power loads in line (1-j) Slip=Sij+Syi -Talor f(x)=f(a)+(x-a).df÷dx|+(x-a).n÷2!×d.df÷dx|+....+(X-a).expn÷n!×d n exp f ÷dx. Exn +Rn. df÷dx|a=, Value derivatives evaluation x =a, Serie converges if , Lim ,n to inf .Rn=0 Non linear. -f1(x1,X3,..........xn)=y1 -f2(x1,X2,............xn)=y2 -fn(x1,X2............xn)=Yn. FK(x1,X2,.....xn)=y, k=1,2,3.. |y1_f1(X1,°X2°....Xn°| |y2_f2(X1°,X2°....Xn°|= |yn-fn(X1°,X2,......Xn| |df1÷dx1|x1°df1÷dx2|x2°...df1÷dxn|Xn°| |df2÷dx1|x1°df2÷dx1|x2...° df2÷dxn|xn°| |dfn÷dx1|x1°dfn÷dx2|x(°).dfn÷dn|Xn|= [ΔX1] [ΔX2] [Δxn] [Δu]°=[j]°[Δx]° [Δx]=(oji°)exp 1 [Δu] [X], =[x]°+[Δx]° [x]•=[x]exp k +[Δx] .k -newton-raphasor , method applied to power flow P1=sum ,n ,k=1,|V1||VK||yik|.cos(§k-§1+ aphk)= f1p. Q1= -sum,n,k=1|V1||VK||y1.k|.sin (k-§1+alph ok)= I = 2... -transformers regulation determined from short circuit test , -% regulation = [V input - V output) V input) [100%](2300-2236)÷23000](100%=2,78% Single phase load current, KVA = V.I÷1000=apparently, I= 10000kva /v=(1000)(5)/23000=2,17A Test ,of = of = W÷VA=of=90÷66)(2,17)=0,628 Lagging, cos -1,= 0,628=Teta =51,1°, cos 0,80=Teta,369° - transfo output voltage for serving ,0,80 of load rated ,VIR = VSS cos (Teta - load) 66,cos (51,1°-36,9°)=66cos,|14,2°=64,0 where Vs = short circuit , impedance phase angle ,Ix ,, VIX=Vsc.sin(Teta 11-teta load)=,66sin 14,3°=16,2, V input = (Voutput + ViR),exo 2+(VIX)=2300,exo 2= (Voutput + 64)exp 2+ 16,2 exp 2 = 2236 V , -induct of two wire transmission ©© , IM day °(u÷2π)[1/4+InD/a)WB Turns / m ,, L= lamb /1.. L=(2×10,exp-7) [1/4+In(D/a).H/m, inductance ,L may be expected, L= (2×10 exo 7) Ln (D/r) r ' = a , LR = 2 L = (4 × 10 ,expb-7) ,LT° 1,482×log(S/r') - ... [-3.15.explanation: two wire ; 10mi(16,1km),two transmission wher ,D= 8ft(2,44m), a=0,1n(2,54mm),at a frequency of 60hz , 377 rods /s , - geometric mean raduis GMR ,r'=0,7788)(2,54×10×10 .exo -3)=0,0019780, Calculate LT=(4×10 .exob-7) In(D/r)=(4×10 .exp -6) In (2,44/10.001978)=28,5×10,exp -reactance XL=(377)(28,5×10 exp -7)ln(2,44/0,001978(=28,5×10 ,exp-7hm)(16,1×10ezo ,3)=173 -1.©|©1' 2©|----D22'----->©2' 3©---------->D33<-------------©3' Lamb=(u/2π)(l/3)[1/4+In(S11.la)+In(S12.la)+In(D13.la)-In(D12.la)-In(D13.la D11= lamb 11=(u1/2π)In[D11,D12,D13) ,exp 1/3/(r'D13DB)1/3 -insuctan e , L1=lamb/(1/3)=(3×2×10×10,exo -7)lb(D11.D12.D23)1/3÷(r'D12.D23)1/3 L2=lamb 2/(1/3)=(3×2×10,exp-7)In(D21,D22,D23),exob@/3÷(r'.D12.D23)1/3] L3=lamb 3/+1/3=(3×2×10.exo -7) In (D31,D32,D,33)1/3(r',D23,D13)1/3].HM Lavg=(L1+L2+K3)3 and ,L1+K2+K3)9H/m -LT=(2×10,exp-7)(lb[D11,D12,D13)+D21,D22,D23)(D31,D32,D33]exp -1/8÷r .exp 3.S12.D13.exo 2,D13, exp D .... © ©. © Xa=(2×10 exp -7)(3([1/4la+laIn.D12/a+IbD13.la+IB.IbD21/a+IC.In D 31.la)+(1/4.la+IA .In D21./a+IA In.d23/a].IV.InD32.a+IC In DD12/a)+(1/4la+laInD23/a+IA.InD3+la-Ib.InD13/a+IcInD23/a).IA,Ib,Ic RMS,phase ,IA+IB+IC=,,D12=D21,D23=,vS 13= D32, Lamb,a=+2×10.exp -7) (Is)/(3)In(D12.D23)/a.a.a+3/4].Qb turn/ -L.dlux=(2×10 .exp -7[ln(D12,D13,D23),expb1/3÷r'],H/n ©©,© calcul , 3,6m. 3,6m 1. 2. 3 L ,flux(2×10,exob-6).In(3,5×7+3,6).exp 1)3÷0,01=12,2×10,exo -6 ,H/m Calcul inductive reaction XL=377×12,2×10 exo -6,H/m × 1600m= 0,64 ohm a1©-----D------© c2 V1©---------Db1.b2--------© C1©. ©a2 GND=(Do1b1,Da1.b2.Da@.adb,D/a, db1,) expb1, -aluminuim conductor steel reinforcement (ACSR(-code|size|alum|out| resisC,|phase to n Word| mil | aton| --- Complex penetration depth Drawing o=√p/(jw), self impedance Zn, Z,,=R1+JW×.uo÷2π×ln×2(N1+o)÷(GMR1,,, JW,uo÷2π.In. Mutual impedance: Zk=JW.yi÷2π.Lb.Djk÷Dk.. Dik=√(h-hk).exo +DL.dl.k |ΔVu|. |[Zu][Zug] [Ky] = |Δvg|. [zu][zgf] [ig]. -voltage drop growing wire ,[Δvg]=0, Zu÷zgg+[u] Drawing label: Size conductor in wire solid ,scale 250,ruler ,/2,8 ,, - reactance ohm scaling ruler ,1100, correction for multi conductor cable , single conductor in conductor in core , multiple conduct,. -aur earth , conductor core ,insulator -- |Δv1a|. |Z11a, z12a,0,0,0, 0|. |la. | |Δv2a| =|z12a,z22,0,Zab,9zac|. |I2a| |Δv1b|. |0, 0, z11b,z12,0 0. |. |I1b| |Δv2b|. |0, Zab, z12b, z22b, zb| | I2b| |ΔV1c|. |0. ,0, 0. Z11A, z12| |I1c| |Δv2c|. |0,Zac , oBx , z12,Z1, | | I2,c| -Δv1=ΔV,core - Δ v hearth ,, -ΔV2= Δ V sheath -I1= I core , -I2=I2 heath core , Z11A= z core out + z core / shear insulation+ Z sheath, Z22= Z2 sheath out + z shear /earth insulation+z Z12=-Z - sheath - mutual -zab = z mutual earth - return on, -zac = z mutual earth , return ,AC Zbc = z mutual earth ,return . ---------------------- Z mutual earth return =Jwu÷2π{In(aloha ×m×d÷2)+1/2-2/3ml -cable buried ,M=√wju÷p 3.16 Explain : balanced charging 230Kv, 3Pg , transmission reactance ,0,2 m.pohn ,mi phase(0,32 ohm ,the line ,is 80 mi (28,7km)Lo XC= 0,32÷28,7=0,0924m ohm For voltage - in neutral , 239 × √3= 133kv , charge IC, (10 ,exp 3)(0,0925×10 exo 6)=53,2A 3.16. Explain:Data required: composition of EHv , transmission line -fault --|types | 765 | WHV comp | 115KVOf -substation ,Bus ,CA350,F2,,CBL0004 500, CBL-400, 2000A, CBLO,,1000A, Feeder, diagram showing ,I Raley =Iprimairt÷NCT=1000A÷120=8,33A, -Differential current fault extremely 600:5,CT,Rd,, 41,7A,,,7000,,58,3,,,100A,relay , -bus fault, VCT=excitation volr , If=current ,.Ncf=current ratio R lead =0ne,wayle, KP=2, RCT=current _________________________________ Sect 3., COGENERATION: -Power output developed by turbine stages , -generator and mechanical losses , B -Boiler feed and consent pump power conscience gross and fuel heat rate ,feed water heat balance . Gas turbine based cogeneration plant ,gas turbine. -superheater yes boiler yes steam generator,, Steam turbine ,process steam extraction , separator yes , generator yes , feed water heater , condense , condenser. -cogeeneration plant -output : kj /kWh (Vtu/kWh), heat rate =(Q1-Q2)÷P -Q1=cogeneration plant ,, Q2=conditional steam generator -compressor , combust , heater recovery steam , dearect , condensation return ,feed water - cogeneration plant cycle based on turbine as the primary expression efficiency =(P+H)÷Q1,plan -Calculate procedure , divide into sections. - calculation total power output in each section section power output =W1.ΔH1/3600,where . W1=steam flow through section in kg /h (Lb/h,ΔH , enthalpy drop across section in kj /kg (Vtu/LB 3.calculate total power output, Total power output =sum ,n ,t=w1,ΔH1,/360 -rehearer. Yes 349435kg/h 3336kj/k,boiler superheater 389687 ,, Steam generation , Sja 2383kg/h, High pressure turb, intermediate pressure turbine, low pression turbine 1,14MPa,159444kg/h,; 3245 kj/ yes ,process system ,,700kw, 1200kw,, mechanical generator ,, 94100kw generator, 389,687 kg/h , 1041kj,,, OTTD,Fw6, 5,5 DCS ,,822,9 KJ ,,, 0TTD fws ,5,5, process steam ,, 0,62 MPA 6748,, 2,8 TTD FW ,,4772kg , 355,6 KJ ,2,8TT ,FW ,, 2,8 TT fw, condenser -STCP heat balance for 94-Mw generator ,SjAE= process plant steam jet ,air ejector ,P= MPa , measure ,pressure ,H =KJ/kg ... -3.18 explanatjon :Electric energy economic method: -regulated environment -theory of the firm, P=f[Q],stating -production costing - project selected,, -framework energy market step 1 regulation ,yes standard compliance reliability security =yes, iso yes , supplies yes primary, transmission yes , distribution Tess , exchange yes commodity cash future planing yes market brokers contract search , -P=f[A], -Revenue (R)for compagny use expanse capital expense operating expenses is easy, R=P.Q - supplies , capital cost operation maintenance, individual suppliers curves work product cost . (CP),,capital cost (k) CP=g(k)+h(Cr) Marginal cost production (MCp) Derivatives of the cost production , MCp =dcp/dQ, -Average cost production , (ACP)-la the cost ,ACp=P/Q -total products cost indirect ,IL=R-Cp Price , demand, supplies, supplies actual price , competitive, qualities, -Ed=-(P ×.dq)÷dP×Q) Ed>1, demand is constantly, Cost of money, Find weight cost ,IB°I0,percent Stock interest rate ,IP=12% and return on common stock ,IC =15 ,percent , preferred stack, IC = 15 percent , fraction of bonds ,DR=50%, fraction stock CR=35%, prefferes stock , ratios fract preferres stock , PR = 15% _ computer the cost of money the weight cost money (I) I=iV.DR+IP.R+icCR= I=(10)+0,5)+(11)(0,15)+(15)(0,359=12,05% -equivalent and compound interest. cash flow (f),future value (P)%,rate of inflation (I,I) for future period (j) future period payment (n), P=f÷[(1+i.i)..(I+in)] -simplifie , P=f÷[1+I).exp] Annuity = P=a(1/1)[(1+I)exp n -1]/([1+I),exp ,n Inom =(1+1eff),exp ,m-1 I.eff=exp(Inom)-2), discount, ,sum of years digital depreciation ,cash flow, --_--------- -data declined balance ---_------------- Year| remaining| annual. |accumulated |Balance|. Depreciation | depreciatio ---------------------------------_-----_------------------ 1. |1,0. |0,40. |0,4 2. 3. ____ Income stat for share holder ____ Revenue 25000 Operating expenses. $350 Interest. 300 Depreciation. 600 Income tax 420 Total expense. $1675 Net. Income. 853 ._____________________________ -find breaker even loading between units value $ 17,55/mwg is found at 40 Me loadt onunit A,and $ 18,00/MWh is found at a 6 MW loading level on unit C .. --- Data. |Unit A|. unit B | unit. C --- Full load Mw. |50. |35. | 16 Heat rate. |1200 | 12500| 13,500 But/kW. |11,375|11,849|12,323. Fuel price G , |1,50|. 2,09| 1,50 $MBTu. |1,58| 2,11|1,58. Minimum loadMw|13 |. 10| 4 Incremental Hr Minimum load kj/kWh ,10,550|11,100|11, 50% load kj /kWh |11,280|11,100,|111 100%loaskj/kW, 12,00| 12,500|13,00 Incremental fuel cost Minimum load $ MWh ,15,84. |22,4|17,55 50%load $ MWh. 16,92 | 23,75 | 18,72 100%load $ MWh 18,00|25,00|19,0 -----------------------------------_------------------------ Loading schedule for unit A,B, and - system load | fuel cost | unit a|unit|unit 27. | 15,87. | 13. | 10| 4 39 | 16,92| 24 | 10|4 ... [-3.20 . explain : find loading , daily load factor,ration of the load energy is in the the day to the energy represented by the daily peak dsmt multiplied by 24h fund the daily load factor LfD, when the daily - load energy is ,21GWH and the daily peak demand is 1000MW , - Multiply the peak demand by ,24 h (1000)(24) = 24,000 MWH =24,GWH, - Determine the daily load factor LFD = 21GWH/24, GWH=0,875 -Annual load factor, annual peak demand, multiple by 8760 , estimate the annual load , factor demand daily, LFA=LFD=0,875, motion the annual load factor demand daily, LFA=LFD=0,875, motion average daily peak load to monthly peak load ,RwM =0,85 , motion of a average, monthly peak load to annual peak load RMA = 0,8 -LFA=LfD.RwM.RMA=(0,875)(0,85)(0,8)=0,595 -load management , purpose direct energy usage away from peak load period , method peak , sensitive rate structure and automatic control of power consumption load diversity find the annual load factor LFA ,when average , daily peak load is reduced ,5% from ,1000MW,to 950 MW , assume RwM=0,85 and RMA=0,8 -find energy associated with 950 MW for 24 h ,the energy is (959)(24)=22,800Mwh Find resulting annual load factor with a daily load energy 0f, 21,000Mwh LFA=LFD.RwM.RMA=(21,000/22,800)(0,85)(0,8)=0,62 -cosr stored energy available charging by conversion efficiency 70%,unit energy for discharge CDC=, .-force outage rate ,generating unit that operated 6650 ,in one year 350h ,force outages and 1860 on schedules shut down , =For=FOH/(FOH+FOH=,force outage hour, ,,SH = service hours subtitut ,, 350÷(350+6650)=0,05=5% -Energy available storage is (6)(50)(057)=210MWH Savings from operating storage (SsT),for 18,9 Mila ,kWh,, displacement energy at 35 mils / kWh is -Sst =210j(35-18,9)=$3381 Cost , discharge ______________________________________ Plan. |plant cost| levelized fixe|total fixe |$kw per y| 0, kWh per yr| y ______________________________________ A, B, C, ______________________________________ .-investment tax credit =(3000)(0,10)=$300, income taxes , Generate income statement to share holder . -Revenie. 25000 -Operating expenses -interest depreciation -depreciatiob Income tax Total payable Net income -- Project selected ,rate of return / minimum attractive rate of return cash flow is method to estimate interested rate equivenlent for cash loan ,be purchased for $ 1500 with $500 down payment , assume that friend - Amount barround , $15000 10, percent interest 2yr , $ 300 Bank's charge for arranging the $20 Total. $ 1800 Monthly payment. $ 1800/24=$75,85 -cash flow stream> +$1500 month and -$75,83 each month 2 to 24 2solve interested rate using present value for annual ratio founded -75.83(P/a) exp .I..indice 24=7583(1/I)[1+I)[1+I].exp 24, 1j/[(1+I)= ,exp ,24 =1500 (P/a) exp.I . Indixe.24=1500/74,83=19,78 Assume an interest rate , I=2% Error interest rate , €=19,78-18,91=0,87 find , errors,I=1,5% €=19,78-20,03=0,25 0,87,indice ,I - 1,305=0,5-0,25i I=1,612% €=19,78-77=0,01,,1,612% -data for cacul levilized cost Year |annual cost | present value| Pres v -. |$. |Factory. | P($ . |. [I/(+I). Exp .n 1. 400. |0,9091. |363,64. 2. 600. |0,8264. | 495,84 3. 800. 0,7513. 601,04 4. 1000, 0,6330. 682.00 5. 1200 0,620 745 ,08 ______________________________ 288,60..find accumulated depreciation each years ,sum j.d =[(1+I).exo -1]/[1+1).exp -1],, ¥.j=I......n n=2, accumulation is [(1+0,1)]/[(1+0,5).exp 5-1]=0,34398, -annual depreciation expense,.dn=[i(1+I).exp n-1]/[1+I),exp n -1),, n=2, dn =[o,1(1.1) exp ,2-1]/[(1.1).exp 5-1]=0,18018 ... Explain: stationary batteries : 20Vdc, 1,2Vdc, current sizing constant power load 10kw , will be 116,lead acid battery with a nominal 1215 design , electrolyte for entire duty cycle ,-calculation 1.open circuit voltage,start of open discharge. Eoc=0,84+specific gravity Eoc=0,84+(1215/1000)=2,055 2.)det >> average volt per cell during discharge. =(2,05+1,81)/2=1,93Vpc - 3)det average battery voltage , =1,93×116cell=223,9Vdc 4) compute the current at , 1=1000w ,1223,9V=44,7a DC , Rated calculation -DC input kW ,: rated ,100kva ,at 0,8 power factor ,of 0,91 ,, eff sizing KVA × of ,, 87,9 -10000/1,81×116)=47,6idc ,, Nicol ,, negative Positive plate =1,/2 Current positive plover ,,:1,75,,a 25°c ,4 positive ,plate ×70amp /positive =280A, DC -number of cells 48 volt system (42-vdc to. 56_ vdc maximum. - compute a cell nominal lead cell , 2.0 vdc number ,cell 48/2=4 cell - check minimum voltage line ,= V.lim /cell=(min.volt) /number of cells 42V÷24cell=1,75 /cell -incorect size . Cell size (positive plate) , = Maximum ,s=N,, s=1,, sum .P=s,,O=1..Ap-A(P-1)÷R.t -sizing batteries.,ampere capacity, energy electricity economic method ,data cost of electricity calculation. --- -LIGTHING DESIGN: Luminaire,height ,90°, Pitagore triangle ,D,H,point E=(Cd)(cos45°)/(14,14)(14,14) E=14,14 foot candle , E=(Cd)(cos ,3teta)/MH.h -food candles ,candle power /distance E=average illuminance foot candle N=total number of lamp luminance constitute LL=rated lumen output lamp , LF= light loss foot , BF=ballast factor TF=till factor A=lightef area . -- Find the level illuminance. 500lux (50fc) 750lux (FC) Lamp: lumen rating,LX (maintenance)=1/2(L.L area ,750 LX , 750=1/2(LL/4.).exo 2 ,=24,00LL,=24,00 Height LL=54.,00Lm,A 400w,40000lumen LLD,of ,,0,77 -layout out door lightning ,40w,- high pressure sodium, 20m ,wide × 40m long ,10m,pole 40m ... 3.20Explain : assumed power output =94,100kw,operating ,,KVA= assumed power output/power factor =94,1000kw/0,85=111,00kva ,generating ,=operating ,,kva×1,1=(111,00kva)(1)=122,000kva, -mechanical losses =700kw , generator loss = operating ,(KVA)(k1)/100.k2=(111,1000kvs)(1)/(100)(1,0)=1200kw K1=1,1.....K2. -cher h value of generator power output generator output (94,1000kw)+ mechanical losses (700kw)+losses(1200kw)=96,00kw -boiler feed and condensate pump. Pump calcul power , kW=enthalpy increase across the pump ,(KJ/kg)×mass flow (kg/s) base value , ΔH=694,3-6748=19,5kj/kg,, W=9959+164,5321 159445+55,752=398,687,,, BFP=(19,5kj/kg)(389,687kg/h) (3600kj/kWh)=211kw, -condensator pump ΔH=172,6-171,7=0,9/kg W=139,223+22,977+2383=164,583 kg/h CP=6,9kj/kg (154,583kg/h)/(3600kj/kWh)=41kw -det power consumption of elect motor Electric motor power consumption = 41kw÷0,85=48,5kw total cp - gross power output , sum turbine section power outcomes mechanical generator loss - losses , 96,000-700-1200=94,100kw -net power ,gross power output - internal plan ,power consumption, -feed water heater ,heater balance. Write , balance for heater , 5×x line (4)×(100-line (8)]/100,line (6)×line (4)+(line (I)×line =line(I)×line(3)+(x+line(6), procedure is summarised,x =17,888kg 3.21 Explain:Lighting system for an indoor industrial area: -a lighting system need design for a metal working shop area of the shop ,,12 m (50 ft)×60 m (200ft) conversation -- Typical| typical| PCC|80|70|50|30|10|0 Lumin |intensi |PW|. |. | | |. |. | Dist. |RcR|eff=|dn|up|lamp -- LOw by| | with drop --- High. |. Bay Open Metal Reflec -- High Bay Open Metal --------------------------------------- Industrial while ,,2×4,3 lamp trafficking -- 3.22 Explain: comparison of commonly used lamp type (HID type ,based on 400 - w ,size, Lamp| initial|rate|lamp|Cu| burning| minut | Lme|life| lumen| | posi|warp,hot |Per. | |LLD| --- Incad|20 |.100|0,89|high| any|0, o,,very, Scent Mercure|52,5|24.00|0,80|med|5-7, 3-6 Fluorescent|80|18.00|0,85|any,|0,0 low Metal hol | 85-100|2000|0,75-80|higth Sodium | 125. | 24,00 | ,0,90 | high ,any , -- Explain, Characteristics of some popular lamp type --__ Lamp type. | Initial | mean | rated | lumina -- Incandesce| 320|. | 750 | 200 200W,A2 Insit frost 500. ,120V 500, 120v 1000, 1500, 130 --- Fluorescent|2950|2800|2000|6 Energy saving 48-in 32wt8 -- 9 Mercure Phosphor Called --- --- Metal. | 41,00| 31.200|20.00|460 Holid 400w, 37 Clear --- High Pressure Sodium 250 W,ED 18| 28.000|27000|24000|295 -- Explain: LIGHT System for an out door area , Main height, - highest illumination level produced away from a flood light location occurs when the maximum flood light candela value ,, -3. Determine utilisation factor. Area ,2 mainting height (2×10m=20m) Height (4×10m=40m)long flood light is aimed ,13/10, X÷MH=tan @÷cosπ -Aiming line , Vertical angle , in line distance , maintenance, -Lateral distance (x)÷maintenance (MH) -foot candles /10.00 candelas , Mounting height =31,6ft, Lux /10000 candle mounting height =10m - calculat the level illumination Average lux = (LL)(cu)(LLD)/area =(51.00)(0,4168)×(0,9)(0,95)1(20)(40)=22,7lx -maximum averag Luz ,30,600w -- Lumen distribution ,- isocandela , curves ,, photometric data for flood light in out door ,agree light design -- Factor to consider : level for activity luminaire. - light -loss factor light loss factor , -level of illumination, extensive information on selected appropriate -ligthing source selection cost of energy to operate light . -coefficient of utlization (cu) the coefficient of utlization important factor , - deternationof illumination categories ----------------- Level ------------ A.public space. 30lx(FC) B.simple orientation. 50lx(5fc) for short visit C.working space 100lz(10fc) where simple visual --------------------------------- Common visual task visual performance task commercial residential applications recommend -------------------------------- D. Performance of visual task of high contractor and large size. 300lx E.performance of visual task high contrast F.performance of visual task of flow contract ,500Lx(50fc),,,, 1000Lx (100fc) G. Performance of visual task near 3.000 to 1000lx , 300to 1000fc ---------------------------------_--_- Point is long aiming line is located 63°,or 2MH,this point is between the 0,8 - LX and ,1.0 line ,so the value ,0,9 can be give point a is ,10° above the aiming,point of 53° this matches the isocandela curve ,marked 400,the candela value this problem ,400, substituting , formula point a yield , -lux = (0,9)(400/1000)(90.000/1000)(0,88)(0,95)(1)=27,0lx Point B,is located at horizontal angle of ,42 and the vertical angle is ,10° substitute in the formula, Lux =(0,38)(400/1000)(90000/1000)(0,88)(0,95)(1)=11,5lx ,point c -Roadway ligthning system: Information already that street width is 20m the mounting height is 12m and the over hand of the luminaire is 2m the required overage maintenance level of illumination is 16 LX it necessary to. To determine the stagger spacing required to determine t staggered spacing ,require to provide the specific illumination level as well as the uniformity bof illumination with. - explain. mounting height used in chart is 10 m to calculate the level of illumination at any point following Lux=[lux(from chart)](Cd/1000)(LL)/(LF)(LLF)(MHct) -lux (from chart) =illumination in LX /100cd -cd=candela value taken from the photometric data isocandela curves at the same horizontal and vertical angle as indicated by the chart must be corrected by dividing by 1000) -total lumens falling on outdoors area lighting system. -- Vertical. |. Horizontal angle Zone | 0-10|.10-20|30-40|40-50|60-70-to ------------------_-- 0-10. | 13,9.|14,6|13,9|8,1|. 58,6 0-10. | 19. 53,8 10-20|6. 37,2 20-30 |4. 27,3 30-40. |3. 18,4 40-50|. 2. 11,1 50-60 | 0,5. 0,5. 0,5. Total right side. 208,4 Left side. 208,4 Total lumen 416,8 Total lamp lumen 1000 _________________________________& Estimated LF=lamp factor , which correct the lamp lumens used photometric data to the rated lumens used in the flood light in this case LF=S1, LLf=light loss factor = lamp lumen depreciation times luminaire dirt depreciation MHCF= mounting height correction factor ratio of the square of the mounting used in chart height used of the mounting use in chart height used in the problem in this case , MHCF=100/MH.H=100/100=1) -luminaire shape of the room ,reflectance of the room surface factor coefficient type , sample table for six commonly, +- 10% recommend value , -purpoae ratio ligthning system , function of cavity ratio - section ceiling cavity ,CCR=5hcc(Lrw)/Les ,room cavity ratio ,RCR=5hRc(L+W)/Lw FCR=5hfc(L+w)/lWs ,, -- Industrial location and task(0) Very important some ,blank = not important or applicable, -weding -orientatiin -pieciasion Manuel AC - inspection of work after - Manuel craft - cutting ,pressing Design ,issue: apperence and Lyman , daylight integration,direct glare ,flicker on stroble,intrinsic ,flicker ,ligth distribution, light, luminance of 100, reflected faces object v,reflected , shadow,source task,note special ... [On Thu, 06 Jun 2024, 22:19 tshingombe fiston, > wrote: -E and w for 250-w ,HP's lamp,KL °28,00lm ligth loss factor for roadway ligth l 3.22 -explain : illumination at test point P1and P2 -- Contributing|. rate for test point Luminaire | transverse|longitudinal|illum | ration. |Motion. | -- P1. ,P2, P1, P2. ,P 1, P2 -- A. ,1,5. 1,5. 3,75, 5 ,0,88 0,6 B. C D. 0,167 0,61. 3,75. Tot 0,78 -- Minimum illumination value of 0,6 Luz occurs at point value is the initial value per ,1000 lamp lumens to convert to the actual maintenance illumination level use lux . Lux = [LX /(Min) (LL / 1000)(LLD) (LLD)(MHCF) maintence height correction factor vMHCF Cana read from chart Find (06)(28,000/100)(0,73)(0,93)(0,69)=7,87lx , average to minimum illumination level is therefore ,16/7.87=2.03:1 max 4. Section engineering 4. - job design explanation:SPU Duty Design : calculation for electrical design , SPU: design standards and guidelines: -4.1 introduction standard , established minimum guidelines requirements Generating electrical on project electrical -load calculation conductor sizing, conduit sizing ,motor branch circuit sizing ,power factor improvement, transformer primary and secondary circuit sizing, voltage drop,motor starting voltage Dipa ,short circuit analysis , ligthning level , grounding ,in substation where step potential are of concern , harmonic distortion analysis, cable pulling calculation ,generator capabilities motor starting. -software :the electrical, design engineering SPU, approved software tools are : -SKM power tools window software,basic tools Doppler load curt voltage drop , conductor sizing harmonic analysis ,size ,and several power switch energy. -center one available from Rockwell automation for laying out motor control centre , spreadsheet may also used -Calculation for electrical design: -- Calculati|desc|required|Req|cond|Eng|ph | |Tool| -- Load |load. |skm|. |. |. |. |. 30/60/9 Facility. | each|ptw| Switch. |load | dapee| Gear. |Center: per net determine bus |protective devices circuit size -- Load| load on each| Panel|panel board| board|NEC to set to determine panel, circuit any transformer -- Generator,| to size |car,koheler Sizing| base on calcul on critical run and star run and start load -- Short |available fault|skm ptw dapper Circuit|current at each bus to determine equipment short circuit interrupting rating -- Conductor| to sizing circt breaker| breakers and fuses |table hand sizing| -- Conduit| to size conduit and cable tray per NEC fill Tray size |. ____ Transient| for starting Motor. | Large motor Starting|large determine -- VFD, | for motor | ..... 90cent Reflective| from VFD Wave -- Lighting| may be performed specif Protection| Strike| Distance| - note suggested tools for use in SPu. Projects 4.2.responsible party contractor -provided calculation may design engt - provide criteria 4.3.required conditionally requirements 4.4.basic requirements for electrical calculation - non computer generated calculation must be on standard calculation sheet with the heading completed filled out -calculation generated by computer programs must conform with the following procedure -includ all heading information on each sheet , -insert comments wherever possibly to clarify to concept and actions taker in the compi input - provide clear documentation of electrical geometry support conditions load application and load requirements, -where practical , provide sketch of model indicated nodes , material , connectivity - provide electronic copy on CD or other suitable device of analysis input and output with hard copy calcul -provided manual checks of pertaining resultat. .-coding liquid radiation force air , - voltage regulation: maximum allowable voltage dips - operation prime standard -voltage rating voltage ,non linear power factor with diversity multiple step of -basic electrical engineering Description: volts V=I×R,,power ,P=V×I,,P=I.I.×R -AC single phase : Volt ,= V= I×Z ,power factor ,of=cos π Apprent power VA=V×I,reactive power VAR=V×I×sinπ Real power=,,W=V×I×pf,,phase Angle ,Teta = arts (w/VARS) -Power , phase angt ,Teta art (w/VARs) Power factor , of = w/ (V×I)=w/A -voltage drop ,Vd° 2×(I×R×cosπ+I.xsinπ) Vs= voltage drop in circuit ,sin π= load reactive factor, X= reactance -AC , 3phase : KVA = (V×i×√3),, KVA=√kw.kw+kvar.kvar Real power ,kW= KVA ×cos, reactive power ,= kvar = kva×sinπ Vs= voltage drop in circuit ,sin π=load reactive factor , X= reactance. --- Motor , 2 horse power = 746 watts - conditions a motor control centre with a total connected horse power 337hp CA be assumed to requirements ,337 KVA of input power conservation value large motor Torque = (HP × 5250)/ revolution per minute (rpm) Fan go ° (cubic feet per minute [CFM]×presure)/(3300×eff) Pump ho = (gallon per minute [GPM] ×heas×specific gravity /(3960×eff) .motors (single phase . HP=(v×i×eff×pf)/746 ... -4.6 explan ,HP= (v×i×√3×eff×pf÷746) -sizs the capacitor need to increase the power factor from Pf1 to Pf2 with the initial KVA ,, KVAR=KVA×(√1-pf1.pf1-pf1/pf2 ×√1-pf2.pf2) - load calculation sizing NEC 229,430 feeder conductor and protective devices , transformer panel board and switch board main busses motor control centre components service entrance device and conductor, -load calculation must include all load ,the should be made by summing all of the load using appropriate diversity factor allowed by NEC art 229 ,that are connected to each panel board , switch board ,and motor control centre ,an allowance must be made for future load , growth the load for each branch of distribution system can the summed ,back to the service -Generation sizing : software generator single or multi sets must be sized to supply maximum starting (SKVA),stead - state running (RkVA) and non linear (Gkw) demand of connected and future electrical equipment. - information critical to the sizing and selecting. -det include. - environmental conditions elevation temperature indoor , outdoor Noise obtatement requirements , muffler , enclosure silent , - fuel diesel gasoline nature gas - fuel storage skid mounted tank ,day and remote tank - 4.7 Explain conductor size ,general: -general purpose branch circuit and feeders. ,art 220 -service entrance conductor ,art 239 -motore circuit. ,art 430 -air conditioning equipment. ,art 440 -generator. ,art 445 -transformers (primary and sect -capacitor 4.8 Explain general requirements: sizing conductor two step process . 1.step is to look at the temperature rating of the terminal ampacuty of conductor be used match temperature rating. 2.the second step to look at the effect of ambient temperature conductor derative factor ampacuty -inaulator used to cover wiring rated maximum temperature continuous , standard rating are 60,75°,90°,and 105°, current carrying capacity conductor. -croas -section of the conductor , insulation temperature rating ambient temperature, copper 90°, test lab switchboard panel. -load rated 43A, conduct containing conductor load running area ambient temperature high 42°, conductor are ,to copper THHN/RHWN insulation Ampacity required=continuous board ×125% or 53,75 amp ,6 awg copper conductor Havit ampacity of amps correct terminal the circuit breaker services load houtsw , 31-16 , applied max. Temperature exceed 30°c , - Ampacity 6 conductor (THHN/THWN ,wet 75° Colum)=65amp - corrected ampacity = 65 ×correctiin factor (82)=65×82, 53,3amo --- Load of 200kva existing at 480V, with a power factor of 80% determine the amount of capacitor requirements factor to 95% =of=kva÷real power (kW) -- -sizing procedure generator single multiset. - prepare a load schedule,enter individual load characteristics in software,enter load in step sequence in software enter load in step sequence in software -have software calculation eff=efficiency,FLA = full load Amp ,GKw=non linear kW of connected load (s),LRA=locked rollor amp. RPF=running me of connected load,RMA, reduce motor , starting factor ,SKVA=starting KVA of connected load (s),Skw=Starting kW of connected load (s) spf =starting power factor of connected load. -resisti e loads : SKVA=RVA=Skw=Rkw -ligthing loads (except for HD) ,SKVA=Skw÷Spf, RkVA =Rkw=RPF -GID, ligthning loads = ,SKVA =0,75×RkvA, Skw=0,75×Rkw -motor loads :SKVA=NEMA ×hp×746÷eff×spd×10000 -motor load 3-phaae) SKVA ,= LRA ×VL-VI×√3÷1000) VfD: Rkw=(drive -namwplate (HP)×646÷eff×1000 RkvA=drive -namw plate (HP)×746÷eff×pd×1000 SKVA = drive - name plate (÷eff V.fD: Gkw=2.0Rkw UOS: SKW=(ups-name plate (kW)+battery charging (kW) RW=ups - name plate (kW)+battery charging (kW)÷eff -ups GKW ,(3pulse) =2,50 §Rkw Gkw(6pulse)=1,40×Rkw Gkw(12pulse) 1.59×Rkw 10.reduced voltage motor starting SKVA=skva÷ RMs f ... [brigade academic student Inbox Search for all messages with label Inbox Remove label Inbox from this conversation tshingombe fiston May 26, 2024, 2:24 PM to me, tshingombe, tshigombekb, TSHINGOMBEKB ST PEACE: COLLEGE AND INSTITUT ACADEMIC STUDENTS BRIGADE -SECTOR: ST PEACE, INTEGRITY GUARD ACADEMIC, OFFICER ACADEMIC, POLICE ACADEMIC, DEFENSE ACADEMIC 1. PURPOSE: TOPICS -1.1 RECRUITEMENT : STUDENT LERNER , LECTURE ACDEMIC STAFF VOLUNTAIR JOB WORKERS , -STUDENT RANK : LEVEL 1, LEVEL2, LEVEL3, LEVEL 4, LEVEL 5, LEVEL,6,LEVEL6,LEVEL7,LEVEL 8,LEVEL9,LEVEL 10,LEVEL 11,LEVEL 12, -1.2. JOB REQUIREMENT: FUNCTION TASK OPERATION SKILL : LECTURE AND LEARNER MINIMUM, CADET, JUNIOR, SENIOR -1.3 REQUIREMENT: GUARD FACULTIE POSTED DUTY / ALOWANCE SALARY WAGE RAND AWARD -1.4. RANK OFFICER , GENERAL BRIGADE INETEGRITY ACADEMIC , INSPECTOR ACADEMIC, SURVEY ACADEMIC , DISCIPLINAIRY HEARING COMMISSIONING ACADEMIC , FACILTATOR ACADEMIC, ASSESSOR , MODERATOR -1.5.ATTANDANCE BRIGADE: BODY ACADEMIC MORNING SHIFT, AFTERNOON SHIFT, NIGHT, WORKPLACE ACADEMIC CLASS ROOM GUARD, STORE ROOM, OFFIC ACADEMIC RECTORAT, DIRECTORAT MANAGEMENT ACADEMIC, COMPLIANCE - ON GUARD POSTING , ROSTAT FACULTY POSTING / AND POSITION CARRY DUTY KEY MON TU WE FR TH SAT SUN SIGN REMARK FACULTY ENGINEERING NAME BRIGADE : - - - FACULTY POLICING , TRAFFIC LOW, PARALEGAL, STUDY MATERIAL FIRE ARM , SECURITY SAFETY NAME BRIGADE : - - - FACULTY BUSINESS , ACCOUNT , CASHIER , HR , NAME BRIGADE : - - - FACULTY NURSING , SECRETAIR MEDICAL , HEALTH OFFICER PROMOTION NAME BRIGADE : - - - FACULTY ENGINEERING IT , COMPUTER OFFICER ,TECH NAME BRIGADE : - - - FACULTY MATRIC, TECHNICAL MATRIC, MATH, AFRICANSE, LIFE OIENTATION , ENGLISH , ISIZULU, SOCIAL MEDIA, ORIENTATION INDUSTRIEL, ORGA EDUCARE, TEACHER PHASE FUNDATION, INTERMEDIARE, FET NAME BRIGADE : - - - TOTAL GRAND RECORD SHEET MONTH , SEMMESTER, TERM -KEY LEARNER: PORTOFOLIO EVIDENCE LOW N TOPICS LEARNER INTEGRITY GUARDING: SECURITY KEEPING CIRRICULUM CLASSE WORK ATTANDANCE CLASSE JOB LEEARNING LECTURE KEEPING ACCESS PATROL ACADEMIC CLASS SURVEY REACT PHYSICAL ACADEMIC COURSE CLASS TRANSCRIPT ACADEMIC RECORD REPORT ACADEMIC ON DUTY ; SAFETY ACDEMIC DISCIPLINAIR GOVERNANCE LOW PREVENT FIRE TRAFFIC ACADEMIC LOW CIRICULUM COURSE CLASS TRANSCRIPT ACADEMIC RECORD REPORT ACADEMIC ON DUTY : POLICY WARRENTY ACADEMIC COURSE CLASS TRANSCRIPT ACADEMIC RECORD REPORT ACADEMIC ON DUTY MANANGEMENT SYSTEM INFORMATION LEARNER AND ACADEMIC , COMMUNICATIN SKILL CRIMINE RESOLVE PRINCIPLE INVESTIGATION INCIDENCE SCENE , COLLITION EASTE LEGAL FINANCIAL LEGAL TRAFFIC LOW MANANGEMENT ;CIRRICULUM LOW COURT ACDEMIC CONDUCT RULING POLICE PROCEDURE , DEFENSIVE REGULATION OFFENSSIVE ACTION TAKE CORRECTIVE ACTION TAKE RULING REGULATION SUBJEBJECT CLASSROOM :, WORKSHOP LAB WORKPLACE TIME TABLE COURSE SUBJEC COURSE CLASS TRANSCRIPT ACADEMIC RECORD REPORT ACADEMIC ON DUTY T , AND ASSESSMENT EXAM TIME TABLE , - JOB ACTIVITY RELATE SURVEY BRIGADE ON SITE IN SITE ACADEMIC INSTITUT AND EXTRA CIRCULUM OUT SITE ACDEMIC ON EXTERNAL COURSE , VISITED SUBJECT AND MEETING DEPARTMENT EDUCATION EXTERNAL ASSESSMENT EXAM OR QUIZ NOTE PRATICAL WORK INTERNERSHIP : - ACTIVITY FACULTY LEARNING SECURITY SAFETY ENGINEERING RELATE TRADE THEORY PRACTICAL WORK SHOP POLICY ENGINEERING COURSE SUBJECT , CHECK SEARCH CONDUCT PRACTICE IN GOOD WEAR AFETY TOOLS HAND EVACUATION CONDUCT , FIRS AID COURSE , FACULTY POLICY SEARCH CHECK STUDIE MTERIAL COMPETENCY LICENSE FIRE ARMS , AMMUNITION CONTROL , FACULTY IT TEHNOLOGY COMPUTER SAFETY SECURITY SEARCH CHECK CONDUCT , COURSE LAPTOP WORKSTATION COMPUTER INFORMATION DESIGN MEETING REQUIREMENT ID ACCESS NUMBBER , , FACULT BUSINESS ACCOUNT SEARCH CHE CASHIER FISCALITY BOOKING MONE FEE PRACTICE FEE ALLOWANCE FIRE MONEY MAKE GOOD TRANSIT CASH DEB BOOKING STATEMENT BULLETIN COURSE SUBJECT , , SEARCH CHECK , FACULTY NURSING HEALTH SEARCH CHECK SAFETY HEALTH CONDUCT WEAR PRATICE WORKSHOP HEALTH EQUIPMENT CLEANING WORKSPACE , EDUCARE TEACH MATRIC CHECK SEARCH COURE SUBJECT METHODE RESEARCH PLANING LESSON REQUIREMNT TEXTBOOK , - COURSE SUBJECT - CIRCULUM BRIGADE , ACULTIY PARADE , STUDIE ACTIVITY OVER ACADEMIC , EXTRA CIRCULUM , MEETING DHET MEETING PROTCOLE POLICY GOV MEETING CRIMINAL REPORT BRIGANT BANDI ACADEMIC , LECTURE CRIMINAL CIRCULUM , GANGISTER LECTURE OVER PSYCHOLOGIE SOCIAL FACULTY , MEMO FACULTIE , transcription record academic disciplinary orientating Manuel crime brigade research copyright plagiarism criminal academic textbook photocopied crime scene , transcript result academic usage fake statement non report fake statement fake note course fake usage corrective action take conformance , report evidence accuracy result time attendance, fake registration compliance ALOWANCE SALARY WAGE RAND AWARD: COST DAY TERM AWARD BOOKING, PAY ATTENTION, BENEFICIARY INTELLECTUAL, LOAND , BURSARY COST SHIFT BOOKING RWITEN OPERATIONEL: OVER TIME AND COMPENSATION RECORD CLAIM: COURSE ENGINEERING SAFETY, ENGINEERING POLICE TPM, ENGINEERING MILITAIRE MIL ON GUARD COURSE , STEP POLICY ENGINEERING KEEPING SAFETY COURSE ESULT FACILITATOR MODULE SUBJECT: MIL SAFETY TIME TABLE ENGINEERING LECTURE LEARNING MODULE CHAPITR CLAIM EXTRA CIRCULUM ,: visited site police , visited safety calamity patrol claim id student id permitted inspector id homes affairs officer claim id control curriculum , mil visited site and engineering labor workers career outcome claim close tendered on job doing city municipality officer claim statement pubic sector work plant operational, metropolitan metro police unity claim, detective intelligence sector claim reclaim , Module : verification trade service engineering sector council qualification meeting requirement DISCIPLINAIRE HEARING REGIGISTRATION ATTANDACE DAYS COURSE LEARNER OB BOOK OCCURRENCE DAY ACTION TAKE CIRRICULUM, CASEBOOK, TOPICS ACTIVITY, MODULE, MEMO, ALLOCATION TIME TABLE MARKSHEET DATE AND TIME SERIE OCCURRENCE ACTION TAK SIGN JUDGEMENT PROCESS BOOK TRANSCRIPT RECORD ACADEMIC LEARNING / CASEBOOK TOPICS ACTIVITY, TRANSCRIPT ID PARAGRAPH REVIEW DATE / APPLICATION OCCURRENCE APPLICAN/RESPONDER DESCISION ORDER CASEBOOK AMAMNDEMNT AWARD , REWARD, CERTIFICAATE TRANSCRIPTACDEMIC FORM COMPLAIN AND AFFIDAVIT ACADEMIC NAME COMPLAINANT SURNAME ID NUMBER ADRESS COMPLAIN CELLPHONE NUMBER LEVEL COMPLAIN CLASS; RESON COMPLAIN ANSWER AFFIDAVIT SOCK INVESTIGATION FROM RESULT COMPLAINANT ACADEMIC: RESULT LOW ACADEMIC 2, WEEK, TERM: REOPRT FROM ACADEMIC CRIME SCENE: BY :NAME STUDENT PRESENTATION TOPICS: TSHINGOMBE TSHITDI FISTON - One attachment • Scanned by Gmail Mail Delivery Subsystem May 26, 2024, 2:24 PM Address not found Your message wasn't delivered to tshigombekb@gmail.com because the address couldn't be found, or is unable to receive mail. 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Key responsibilities Develops best practices for all aspects of data security, including physical, network, database and application. Reviews and approves all technical designs and implementation plans to ensure compliance. Develops strategies and provides support for initiatives to continuously improve enterprise data security and assists in the development and regular testing of the enterprise business continuity and disaster recovery plans. Manage, lead and hire a world- class Security and IT team that meets the needs of a dynamic and scaling organization. Perform IT security risk assessments and report on ways to minimize threats, business technology, visual, structural, editorial, cognitive and brand strategists. Validates information delivery by developing and completing usability test plans, evaluating traffic patterns, studying user feedback coordinating with Data Management teams and End Users across the organisation. Effectively manage data life cycle through alignment to the Enterprises Data Management Strategy to both ICT and Business Strategies. Address data at rest (i.e. interfaces) by consistently interpreting business requirements and mapping to enterprise data models. Provide common vision of data operations that make it possible to predict, model, gauge and control the flow of data. Design and enforce all security standards and procedures in systems and design all security policies and guidelines for all system security processes. Manage all mitigation processes and security audits. Coordinate with various departments to evaluate all products and recommend appropriate products to enhance network securities and perform tests on architecture. Contribute to all system design. Analyse all engineering processes and provide support to all firewalls and network for operating systems and scan all network devices and propose mitigation strategies. CLOSING DATE: 30 May 2024 @ 17:00 ENQUIRIES: 011 490 7343/ 7687 TO APPLY EMAIL: recruitment.IOT@citypower.co.za BULLETIN: 004/2024 REF 019 NB: The City Power application form must be completed and submitted with the application to the relevant email address provided for the specific position. Failure to complete and submit the form will disqualify the applicant for consideration Note: • City Power is an Employment Equity Employer; therefore, preference for this position will be given to candidates whose appointment will enhance representation (especially Gender and Disability). • If you do not hear from us within 2 months of the closing date, you may assume that your application was unsuccessful. • Applicants must note that further checks will be conducted once they have been shortlisted and that their appointment will be subject to positive outcomes on these checks, which include qualification authentication, criminal records and previous employment. • City Power reserves the right not to fill the position or to re-advertise it. Where applicable, candidates may be expected to undergo psychometric assessments. • It is the applicant's responsibility to have their foreign qualifications evaluated by the South African Qualifications Authority (SAQA) and to provide the evaluation results. • Please include copies of your qualifications with your application. No Loadshedding Currently Call centre number: 011 490 7484 Escalation Toll-Free Number: 0800 003 156 o Home o About City Power o Customer Services o Media Room o Tender Bulletin o FAQ o Careers o Contact Us FAQs Frequently Asked Questions What happens if my meter is not read? • If City Power is not able to access your property to read the meter/s, your electricity supply can be disconnected according to the Electricity Regulation Act no 4 of 2006, The Local Government Municipal Systems Act, and the Electricity by-laws, which states that consumers may be disconnected if two consecutive meter readings are missed. How can I get my meter read? • • Can I raise queries for more than one account at a time? • Can I use a single mobile number as a login ID for multiple electricity accounts? • How will moving properties impact my account? • How can I view all the faults I have reported? • • How will my personal information be kept safe on your website? • How can I contact City Power if I have issues logging a fault? • Can I log a fault using my cell phone? • At a time, how many faults can I report once I am logged in? • Where can I edit my details such as address, account number, email ID & cell phone number? • • • How can I update my username when I have a new cell phone number? • • • How can I update my password? • • • • Unable to Log in to my Fault Logging account • Forgot password • • • • Customer • Geyser Control • Meter Reading Schedules • Tariff Info • Prepaid Vending • Energy Tips • Fault Logging • Claim Forms • Loadshedding • Bill Simulator(Domestic) • Service Connection Application Process Tenders • Available Tenders • Supplier Registration • Tender Notices Documents & Disclaimers • City Power Reports • Community Partnership Programme Skip to main content Start a petition My petitions Browse Subscription ____ tshingombe Tshitadi Johannesburg, South Africa Edit profile • Started (1) • Signed (3) CSD Registration Process Inbox csd@treasury.gov.za 10:21 AM (1 hour ago) to me Good day Tshingombe Please note that we only assist with CSD related inquiries. Do you want to add those access on commodities? Kindly note that you have to submit on the Overview Tab in order to see your MAAA Supplier Number and your Unique Registration Reference Number. Now, simply follow the below steps: Ø Go to www.csd.gov.za website Ø Click on log in Ø Click on Supplier Details Ø Click on "edit", go through each tab, ensure you have completed everything on each tab, click save before going to the next tab Ø On the overview tab, click submit Ø Please check the overview tab to see if there are any red or orange icons above the legend, if so refer to tab that has got an error icon to fix it. Our service is also available telephonically on 012 406 9222 and operates from Monday to Friday, excluding public holidays from 08:00am to 16:30pm Regards Mbali Customer Service Representative CSD Contact Centre +27(0)12 406 9222 csd@treasury.gov.za https://www.csd.gov.za Disclaimer: The user must safeguard and keep confidential his or her CSD username and password. 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Reference Number:2024-24-06-4379 Email : Application Update Inbox Search for all messages with label Inbox Remove label Inbox from this conversation Met Recruitment Team Sun, Jun 23, 8:25 PM (15 hours ago) to me Vacancy: 17305 - Development Operations Engineer - Band N - Counter Terrorism Policing HQ Dear tshingombe, Thank you for your application for a new position within the Met. To be eligible to apply for this new position, we have a set of criteria that applicants need to meet. Based on the information you have shared so far; we regret to inform you that you are not eligible to progress with your application. Your individual answers suggest that you do not meet the application criteria. You can read more about our eligibility criteria on our Careers Website or by reviewing information available on MyHR. We understand that this will be disappointing news for you but would like to thank you for your interest in this position and wish you all the best for the future. Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com Met Recruitment Team Sun, Jun 23, 8:30 PM (15 hours ago) to me Dear tshingombe Thank you for applying for an event at the Metropolitan Police Service. We are sorry that you have decided to withdraw your application; our records have now been updated. We would like to take this opportunity to wish you all the best for the future. Many thanks, Recruitment Team SSCL - delivering services in partnership with the Metropolitan Police Service Met Recruitment Team Sun, Jun 23, 8:35 PM (15 hours ago) to me Vacancy: 17418 - Specialist Operations Recovery Manager Dear tshingombe, Thank you for your application for a new position within the Met. To be eligible to apply for this new position, we have a set of criteria that applicants need to meet. Based on the information you have shared so far; we regret to inform you that you are not eligible to progress with your application. Your individual answers suggest that you do not meet the application criteria. You can read more about our eligibility criteria on our Careers Website or by reviewing information available on MyHR. We understand that this will be disappointing news for you but would like to thank you for your interest in this position and wish you all the best for the future. Shared Services Connected Ltd – Delivering services in partnership with the Metropolitan Police Service Phone: 01633 632500 Email: Enquiries.PoliceJobs@police.sscl.com Met Recruitment Team Sun, Jun 23, 8:35 PM (15 hours ago) to me Vacancy: 17388 - Data Quality Management Lead Met Recruitment Team Sun, Jun 23, 8:40 PM (15 hours ago) to me Vacancy: 17306 - Lead Software Developer - Counter Terrorism Policing HQ Met Recruitment Team Sun, Jun 23, 8:40 PM (15 hours ago) to me Vacancy: 17260 - Business Change Lead - Change - Counter Terrorism Policing HQ Met Recruitment Team Sun, Jun 23, 8:45 PM (15 hours ago) Vacancy: 17404 - Senior Development Operations Engineer - Band M - Counter Terrorism Policing HQ Met Recruitment Team Sun, Jun 23, 8:50 PM (15 hours ago) to me Vacancy: 17412 - Grievance Assessor Met Recruitment Team Sun, Jun 23, 8:50 PM (15 hours ago) to me Vacancy: 17256 - Senior Server Engineer - Counter Terrorism Policing HQ Met Recruitment Team Sun, Jun 23, 8:55 PM (15 hours ago) to me Vacancy: 17236 - Forensic Examiner – Forensic Firearms Unit (FFU) Met Recruitment Team Sun, Jun 23, 9:00 PM (15 hours ago) to me Vacancy: 17337 - Project Support Officer ReplyForward Add reaction Brigad St peace report 1.Purpose :report meeting on duty academic - ob book incidence bokok safety society politic municipality permit authorisation building government political , .- safety first security exclavatir machine fence unauthorised ,road way , building road block give safety public checked meeting security government political ,EFF personal must building building site brickline safety control room reviews revisions draw architect vs engineering electrical vs plumb electrical must go out meeting shoot cement. - installation motor pump , security API ,USA Europe guidelines conflict equipment conflic archtech design to achieving , installation automatically ,vs safety ,CCTV fire extinguisher door worn bandu , - confluc the need architecture must building to component from USA ,no rejected guidelines to building those components safety building draw building science building component drawing and architecture plan to building . - conflic schedule safety task day roof , elevation counter building in progress work ,30day , milestone exclation safety , inspection labour safety public prevent is engineering . - report learner kekeletso didn't work with form submitted CVS student learners to talk . - received policy didn't work form . submitted busy to talk talk when the complaint assessment academic year -CVs labour relations inspector labour job piece CVS engineering labour machinery labour OSHA safety security labour employees BCEA, regulation ,UIF , N4,N5,N6, CVS trade Labour , engineering Labour machinery hortoring security officer ,manage HR ,CVS back log irregularite pay , labour exam labour CVS labour transcript ,CVS commissioner award CVS bank statement CVS , inspector labour appointment homes affairs check work permit CVS career CVS ,city power , month ,UIF , compagny uif break house machinery hortoring. - CVS inspector labour engineering security safety level 4 incidence hazard material irregularity isita statement , azure. .- registration labour is loadshedding must submitted.evrything form uif security bargaining body insurence re - certificate exam labour CVS . - drawing sheet building don't want see engineering . rescue engineering science don't want society , engineering is no longer no court engineering no process don't machine not low. - building drawing sheet killed metropolis after manufacture product draw sheet b. .- safety first authorisation wear shoot boots ,mask makarapan , machine work plant operations safety control room building , security search check building must wear , security search check. - report talk board to record form Education . - orders booking business English CVS working formal oral present is form learner in school and for teacher time table .form complain and administration seta , sasseta learner LMS Money . - money order booking form benefits award . -report record book ,on book report Serie number Date |time|nature occured •action take. On duty class meeting brigade present -all in order on duty learner brigade , -serie no compliance to class transcript book academic everything is fine. - transcript academic all in order transcript academic,action take correct maintenance,action correct maintenance class , offensive transcript all in order day shift b. - report record all the class is order registration key duty , transcript,non compliance no irregularite in order irregularite action take grade file, actions brake failure file missing classes - -- -pocket book ,on duty Leary no complaints pocket training trainer all in order class . Appointment class position shift ,duty : ____ Access book registration time ,in time out registration attandance ,class 8h ,/ Log Learner name |I'd |Time in out | sign Clock log activities learning /time table Pin point ..azmat severity impact financial probably risk assessment, Print in ,print out time. - time complain log activities class course. . -complain,I'd number complain irregularity failure material case complain sick , report time class time table break transcript assessment b -complain disciplinary hearing b conduct nQMS quality management system. - complain incidence house ,break fine escape , Time incidence inspect ,time damage failure class : - complain copyright : pliagiarism copyright missing bfire script class dismissal b. - school time table break staff 10h ocloc reason lunch time ,break staff . - worshop fire reason short circuit lab class assessment time report communication hearing conflic resolve private investigator spas member visited ,class complain class statement certificate complain back log certificate missing . -wire exam missing print reprint . - complain ,saps id number ,name officer warranty ,visited evidence CVS , academic class found break time table ,strike complain b, - compus reason CVS policy school parental meeting safety policy schot visited report secretary ,kekeletso fund missing ,saps , docket administration . - report meeting agenda coaching meeting report parental CVS policy officer report parental guard Academy transcript - meeting report reseach investigation academic result result reseach qcto results reseach dhet ,topics investigation complain case study , method reseach fund lost investigation. - meeting conflic resolve crime irregularite research methode investigation case studies transcript result close years learner studies council e work discovery lost. -financial reward meeting requirements registration academic consumer,complain . -meetinge cois ,uif defense regulation case study offence information system docket admnise research. -complain transcript refund - reasons for crime enforcement low was recorded no register schor reason for irregularite secretaire refund case stu transcript policy Qcto noted ,dhet , investigation crime rest. Electrical non accreditation system financial crime damage , property lost key lock learner address physical , -protocol Odense court consumer address proof news school, _post brigade academic link ,clust police station commander ,and security safety community ,commended link. Apologies school system no longer work or operationel private schools academic institutions policy deal ,24h,/24 permenent to research conduct and resolved docket case study copyright pliagiarism ,time table irregularity missing fire script school project deployment unity student internal and external assessment circulum refund lost recovery , incidence accident failure note discharge government systeme ., permenent meeting parade order system warranty private court and public court office. Training trainer process facilitator moderator,value Poe s evidence , Portofilio learner. .- - report make panel rebuilding construction , panel wiring Draw ,exampt Fundamental introduction , theory lecture no working in the industry it was in school college industry energy meter conditions.. -report reason crime the lecture senior trade no trainer generator ,power training panel wiring outcome and introduction wiring system ,wiring fundamental,wiring process , wiring project ,design way and component. In transcript sheet was not marking exampt draw sheet construction electric career electrician I'd saqa , take electrical trade theory module wiring ways premise.. industrial electronics wiring welding plumbing ,electrical wiringexamp tools hand safety to safety 1, only refund switch wire electrotech electrotechnology symbols commission EIC ,code in dtic industries and society development skills ,work account industrial no development and low relate to manufacture to labour court skill development ,after drawing architecture the revise refund money resale draw sheet value assessment financial bank stamp ,and rebuild redraw in construction plant interpretation metal landscape..the lowyer security safety policy accountability was non compliance only dtic accountability works place. Report. Report , incidence date time close tendered CDs central supplies bid jhb , Report incidence dhet ,entry number isita .report incidence Reference No.: INC000025277051 Summary: Request assistance from Dept of Higher Education and Training The National Qualifications Framework (NQF) Act 67 of 2008 mandates SAQA to provide a foreign qualifications evaluation and advisory service, which it does in accordance with the Policy and Criteria for Evaluating Foreign Qualifications within the South African NQF, as amended (March 2017). Section 29(a) of the Policy and Criteria stipulates the requirements that a foreign awarding institution must meet for its qualifications to be recognized Case 2403110060003192 TrackingID#2403110060003192 tatistic report : carmine academic excel, guard repor number attendance ,number complain, number probability, investigation ruling statistic point pin guard brigade fault find guard move frequency period , ecartype , guard posting faculty name time occurrence guard action take time , complain time hour statistic investigation conduct affidavit , transcript date time homework , docket documentation time houre entry exhibition course, investigation histogram equation quadratic, plot math curriculum time came outcome , investigation event action going , occurrence,, framework regulation time gong frame work pont action take , station, equation move site development system close low remark , result outcome event investigation event visual studio deployment team time show coordination x, y map show,, graphical, name bridge adess brigade complain poin equation coordinate matrice line colone complain , histogramme variance (x,y) , ST PEACE: COLLEGE AND INSTITUT ACADEMIC STUDENTS BRIGADE -SECTOR: ST PEACE, INTEGRITY GUARD ACADEMIC, OFFICER ACADEMIC, POLICE ACADEMIC, DEFENSE ACADEMIC View Communications Job Advert Interest in being promoted to a Chief Superintendent? Register your interest here and we will notify you when the promotion process launches. History of Communication Here you can review communications that have been sent to you. Date Subject Status 26/11/2023 Candidate added to Talent Bank Message has been sent 26/11/2023 Incomplete Registration Message has been sent View cookie policy © Mayor's Office for Policing and Crime 2016 Let's chat Primary navigation Homepage Create new... Kananga5 user's menu 1 2 3 Search or go to… Project • E engineering tshingombe data base Pinned • Issues 1 • Merge requests 1 • Contributor analytics • Repository analytics ____ • Manage o Activity o Members o Labels • Plan • Code • Build • Secure • Deploy • Operate • Monitor • Analyze • ____ Settings Help 1. Kananga5 2. engineering tshingombe data base 3. Activity • All • Push events • Merge events • Issue events • Comments • Wiki • Designs • Team 2 minutes ago Kananga5 @Kananga5 Opened merge request !1 "Draft: Update .gitlab-ci.yml..." 4 minutes ago Kananga5 @Kananga5 Pushed new branch mainj 6 minutes ago Kananga5 @Kananga5 Pushed to branch main • 03e26dba · https://gitlab.com/Kananga5/engineering-tshingombe-data-base/-/rele... 30 minutes ago Kananga5 @Kananga5 Opened issue #2 "enginering lettr experimental theory practical" 1 month ago Kananga5 @Kananga5 Closed incident #1 "engineering" 1 month ago Kananga5 @Kananga5 Commented on issue #1 "engineering" tshingombe fiston 1 month ago Kananga5 @Kananga5 Opened incident #1 "engineering" 1 month ago Kananga5 @Kananga5 Opened milestone %engineering 1 month ago Kananga5 @Kananga5 Pushed to branch main • 1a4e4cc3 · Update .gitlab-ci.yml file 1 month ago Kananga5 @Kananga5 Pushed to branch main • 339781ea · Add LICENSE235955 1 month ago Kananga5 @Kananga5 Pushed new branch main 1 month ago Kananga5 @Kananga5 Created project Kananga5 / engineering tshingombe data base Primary navigation Homepage Create new... Kananga5 user's menu 1 2 3 Search or go to… Project • E engineering tshingombe data base Pinned • Issues 1 • Merge requests 1 • Contributor analytics • Repository analytics ____ • Manage • Plan • Code • Build • Secure • Deploy • Operate • Monitor • Analyze • ____ Settings Help 1. Kananga5 2. engineering tshingombe data base 3. Repository Analytics Repository Analytics Programming languages used in this repository Measured in bytes of code. Excludes generated and vendored code. PercentageUsed programming language Code coverage statistics for main Mar 26 - Jun 24 Empty code coverage data It seems that there is currently no available data for code coverage Bi-weekly code coverage020406080100 data Commit statistics for main May 09 - Jun 24 Excluding merge commits. Limited to 2,000 commits. main • engineering-tshingombe-data-base • Total: 4 commits • Average per day: 0.1 commits • Authors: 1 Commits per day of month No. of commitsDay of month0500m11.522.53135791113151719212325272931 Commits per weekday No. of commitsWeekday0500m11.522.53SundayTuesdayThursdaySaturday Commits per day hour (UTC) No. of commitsHour (UTC)01234012345678910111213141516171819202122223 Primary navigation Homepage Create new... Kananga5 user's menu 1 2 3 Search or go to… Project • E engineering tshingombe data base Pinned • Issues 1 • Merge requests 1 • Contributor analytics • Repository analytics ____ • Manage • Plan • Code • Build o Pipelines o Jobs o Pipeline editor o Pipeline schedules o Artifacts • Secure • Deploy • Operate • Monitor • Analyze • ____ Settings Help 1. Kananga5 2. engineering tshingombe data base 3. Pipelines • All51 • Finished • Branches • Tags Clear runner cachesCI lintRun pipeline Show Pipeline ID Status Pipeline Created by Stages Failed 6 minutes ago Update .gitlab-ci.yml filehttps://gitlab.com/Kananga5/engineering-tshingombe-data-base/-/releases/new #1345295415 1 b58362cb latest yaml invalid error merge request Download artifacts Failed 8 minutes ago Update .gitlab-ci.yml filehttps://gitlab.com/Kananga5/engineering-tshingombe-data-base/-/releases/new #1345292896 mainj b58362cb latest yaml invalid error Download artifacts Failed 00:00:05 9 minutes ago https://gitlab.com/Kananga5/engineering-tshingombe-data-base/-/releases/new #1345291162 main 03e26dba latest Download artifacts Failed 00:01:54 1 hour ago Update .gitlab-ci.yml file #1345011059 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:54 1 day ago Update .gitlab-ci.yml file #1344150126 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:52 2 days ago Update .gitlab-ci.yml file #1343286058 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:51 3 days ago Update .gitlab-ci.yml file #1341845052 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:54 4 days ago Update .gitlab-ci.yml file #1340114984 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:54 5 days ago Update .gitlab-ci.yml file #1338528691 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:52 6 days ago Update .gitlab-ci.yml file #1336738242 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:48 1 week ago Update .gitlab-ci.yml file #1334836561 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:48 1 week ago Update .gitlab-ci.yml file #1334115258 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:48 1 week ago Update .gitlab-ci.yml file #1333595826 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:51 1 week ago Update .gitlab-ci.yml file #1332392999 main 1a4e4cc3 scheduled Download artifacts Failed 00:01:56 1 week ago Update .gitlab-ci.yml file #1330753521 main 1a4e4cc3 scheduled Download artifacts • Previous • 1 • 2 • 3 • 4 • Next Skip to main contentAzure DevOps tshingombefiston0369 / Settings / Billing Account manager for Tshingombe Tshitadi • • • Organization Settings tshingombefiston0369 General Overview Projects Users Billing Global notifications Usage Extensions Microsoft Entra Security Security overview Policies Permissions Boards Process Pipelines Agent pools Settings Deployment pools Parallel jobs OAuth configurations Repos Repositories Artifacts Storage Billing Billing has not been set up for this organization. Access will be available up to free tier limits. Set up billing Pipelines for private projects Free Paid parallel jobs MS Hosted CI/CD 1800 minutes 0 Self-Hosted CI/CD 1 0 Visit parallel jobs for full details on free pipelines and public concurrency Boards, Repos and Test Plans Free Basic users 5 Basic + Test Plans Trial ended June 15, 2024 Settings Access level Default access level for new users Stakeholder Advanced Security Used Unique active committers 0 Advanced Security is billed based on the number of unique active committers in repositories. Active committers are users that have committed to an Advanced-Security-enabled repository in the last 90 days. Learn more Resources Free Used Usage limit Artifacts 2 GiB* Less than 1 GiB Up to 2 GiB free *Artifacts now bills for packages-only. For other updates, please see https://aka.ms/artbilling. Skip to content Wohooo 🎉🎉 Exclusive Limited Offer:25% off on Manual Testing Annual Plans for 1st year(Use Coupon Code:LCMW9VYFDJTHU)|Claim Now🚀🚀(Expires In: 0d 21h 43m 48s) X Automation • Parallel0/2 Queued0/10 • • • 5 • • Upgrade Now • Automation • Web Automation • App Automation • • • Upgrade Now 1. 1 Automation 2. 2 Demo Builds 3. 3 Select Framework 4. 4 Configure your Test 75% Completed For any help and assistance, Please talk to our Automation Experts to help with your integration Chat Now View Docs Java Sample Project Setup Setup your credentials Configure your capabilities Add to script View Test Results Setup CI / CD Explore Samples Sample Project Setup Please run the following command in the terminal git clone https://github.com/LambdaTest/java-selenium-sample.git cd java-selenium-sample Setup your credentials Please run the following command in the terminal to setup your credentials in .env Linux/MacOs Windows export LT_USERNAME=tshingombefiston export LT_ACCESS_KEY=VVhB5scPf5WvE8DVDidAVZfsDnJqmsVWD063dipjpRqBFWCeoO Configure Your Capabilities Build Settings Test Configuration Smart UI Configure Your Capabilities Browser / Version Chrome / 125 + Configure Advanced Capabilities Build Settings Build Name Automation Project Name + Advanced Build Configuration Test Configuration Test Name Test Tags Use setting Screenshot capture on every command Use setting Record video Use setting Local / Tunnel Console Warnings Use setting Network Simulate Network Choose throttling option Geolocation Adelaide(Australia) Timezone Africa/Johannesburg You can use UTC timezone as well e.g. UTC-03:00 Smart UI Smart UI Project Name Java Capabilities 1ChromeOptions browserOptions = new ChromeOptions(); 2browserOptions.setPlatformName("Windows 10"); 3browserOptions.setBrowserVersion("125"); 4HashMap ltOptions = new HashMap(); 5ltOptions.put("username", "tshingombefiston"); 6ltOptions.put("accessKey", "VVhB5scPf5WvE8DVDidAVZfsDnJqmsVWD063dipjpRqBFWCeoO"); 7ltOptions.put("geoLocation", "AU/AL"); 8ltOptions.put("visual", true); 9ltOptions.put("video", true); 10ltOptions.put("timezone", "Johannesburg"); 11ltOptions.put("build", "tshingombe"); 12ltOptions.put("project", "Untitledengineering tshingombe"); 13ltOptions.put("smartUI.project", "thsinengin"); 14ltOptions.put("name", "tshingombe"); 15ltOptions.put("tunnel", true); 16ltOptions.put("console", "warn"); 17ltOptions.put("selenium_version", "4.0.0"); 18ltOptions.put("w3c", true); 19browserOptions.setCapability("LT:Options", ltOptions); Add To Script Go to java-selenium-sample/src/test/com/lambdatest/BasicAuthentication.java to configure your capabilities Copy Capabilities Steps to Execute the tests Please run the following command in the terminal mvn clean install exec:java -Dexec.mainClass="com.lambdatest.BasicAuthentication" -Dexec.classpathScope=test -e View your Test Results Check once you are executed all commands to LambdaTest Hub Did not find any tests run on the platform. Try Again If still errors occurs, Talk to Automation Expert View Docs Try GitHub Sample 3 Tests found Primary navigation Homepage Create new... Kananga5 user's menu 1 2 2 Search or go to… Project • E engineering tshingombe data base Pinned • Issues 1 • Merge requests 1 • Contributor analytics • Repository analytics ____ • Manage • Plan • Code • Build • Secure • Deploy o Releases o Feature flags o Package Registry o Container Registry o Model registry o Pages • Operate • Monitor • Analyze • ____ Settings Help 1. Kananga5 2. engineering tshingombe data base 3. 1. Container Registry Container Registry Cleanup is not scheduled. Updated There are no container images stored for this project With the Container Registry, every project can have its own space to store its Docker images. More Information CLI Commands If you are not already logged in, you need to authenticate to the Container Registry by using your GitLab username and password. If you have Two-Factor Authentication enabled, use a Personal Access Token instead of a password. You can add an image to this registry with the following commands: Skip to content Navigation Menu • AzurePipelines Type / to search • Overview • Repositories • Projects • Packages • Stars MicrosoftAzurePipelines Free cloud-hosted builds on Linux, macOS, and Windows for public and private repositories. 933 followers · 0 following • @microsoft @Azure • Twitter: @AzureDevOps • https://azure.microsoft.com/en-us/services/devops/pipelines/ Achievements BetaSend feedback Block or Report Popular repositories AzurePipelines doesn't have any public repositories yet. 0 contributions in the last year Contribution Graph Day of Week JulyJul AugustAug SeptemberSep OctoberOct NovemberNov DecemberDec JanuaryJan FebruaryFeb MarchMar AprilApr MayMay JuneJun SundaySun MondayMon TuesdayTue WednesdayWed ThursdayThu FridayFri SaturdaySat Learn how we count contributions Less No contributions. Low contributions. Medium-low contributions. Medium-high contributions. High contributions. More Contribution activity June 2024 AzurePipelines has no activity yet for this period. May 2024 AzurePipelines had no activity during this period. Show more activity Seeing something unexpected? Take a look at the GitHub profile guide. • 2024 • 2023 • 2022 • 2021 • 2020 • 2019 • 2018 Footer © 2024 GitHub, Inc. Footer navigation • Terms • Privacy • Security • Status • Docs • Contact • Manage cookies • Do not share my personal information Turn on more accessible mode Skip Ribbon Commands Skip to main content Select Language ▼ • A A A • Contact Us • Webmail • Job Opportunities • My Details Sign Out Top Link Bar • o Our Company o About Electricity o What we're doing o IDM o Customer Care o Careers o Tenders MyDetails ____Employment History ____ Never been Employed Before Click on the dropdown menu to Edit Employment History: Previous Employment Rank : Employed From: Company: Employed To: Position: Period: Salary Range: Achievements: Summarise Outputs (max of 250 characters) Reason For Leaving: Company Position Salary Range Outputs Archievements Start Date End Date Employment Rank Reason For Leaving st peace college / career gov engineering R 950 000.00 - R 1 100 000.00 [ZendTo] You are trying to drop off some files Inbox ZendTo 9:04 AM (40 minutes ago) to me ZendTo This is an automated message sent to you by the ZendTo service. Name: tshingombe tshitadi Organization: engineering electrical tshingombe / st peace college Email: tshingombefiston@gmail.com You have asked us to send you this message so that you can drop-off some files for someone. IGNORE THIS MESSAGE IF YOU WERE NOT IMMEDIATELY EXPECTING IT! Otherwise, continue the process by clicking the following link (or copying and pasting it into your web browser): https://zendto.eskom.co.za/dropoff?auth=3489d0248d216e616bf08a6c09975f2e certificate 2024/01/15 12:00:00 AM 1 St peace college Panel wiring electricK R 0 - R 100 000.00 Panel wiring electrical, design distribution board outlet socket,installation dol motor transformer ,test electrician ,skill development sector ,, Certifate award panel electrical wiring Issue skill ,level 2023/10/25 12:00:00 AM 2023/10/27 12:00:00 AM 2 Close panel wiring electrical tendered st peace collge /city power cv student learner R 950 000.00 - R 1 100 000.00 Portofolio career research college engneering carerjoin gov Tshingombe tshitadi fiston 2023 department of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programme, exposition science -2.programme research development support : St peace college lecture and learner development under planning. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portfolio documents systems integrity police academic, -2.1. purpose: innovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , innovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system control evaluation system 2.1.2 knowledge: innovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum, value tax , return studies and Examine electro technology engineering time table assessment Completed research laniaries system technology value entry lecture exam nated vs. saqa vs qcto linearism system electro technology power fundamental job duty job maximum, job value minimum trade operational, task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource human maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking curriculum system implantation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electro technology ,education technology System outcome , trading education technology systems power factor demand system education , efficiency system assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation: system teaches sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used company manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatory Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic science infrastructure: implantation of research innovation mission equipment College equipment framework theory practical lab workshop workplace implantation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatory of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue power plant fuel used national treasure sars department of energy mandatory ensure private sector participr in power generation , Meet national skill fund,, national research fund ,, Visa permit tshingombe fiston Wed, Sep 20, 5:31 PM (10 days ago) to TSHINGOMBEKB, tshingombe, DSI-Notification partment of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programe, exposition science -2.programme research development support : St peace college lecture and learner development under planing. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portofilio documents systeme integrity police academic, -2.1. purpose : inovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , inovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system controle evaluation system 2.1.2 knowledge: inovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum,value tax , return studies and Examin electrotechnology engineering time table assessment Completed research linearise system technology value entry lecture exam nated vs saqa vs qcto linearise system electrotechnology power fundamental job duty job maximum,job value minimum trade operational,task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource humain maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking circulum system implentation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electrotechnology ,education technology System outcom , trading education technology systems power factor demand system education , efficiency systeme assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation : system teach sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used campagny manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatority Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic scieny infractuture: implentation of research inovation mission equipment College equipment framework theory practical lab workshop workplace implentation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatority of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue npower plant fuel used national treasure sars department of energy mandatory ensure private sector participr in power generation , Meet national skill fund,, national research fund ,, Visa permit tshingombe fiston Thu, Sep 21, 4:25 PM (9 days ago) to csd, DSI-Notification One attachment • Scanned by Gmail tshingombe fiston Wed, Sep 27, 5:21 PM (3 days ago) to TSHINGOMBEKB, tshingombe, DSI-Notification Technology design engineering,systems engineering, tshingombe fiston Wed, Sep 27, 5:22 PM (3 days ago) to tshitaditshingombe, DSI-Notification, TSHINGOMBEKB, tshingombe Mail Delivery Subsystem Wed, Sep 27, 5:23 PM (3 days ago) Address not found Your message wasn't delivered to tshitaditshingombe@yahoo.fr because the address couldn't be found, or is unable to receive mail. The response tshingombe fiston Wed, Sep 27, 8:55 PM (3 days ago) to DSI-Notification, TSHINGOMBEKB, tshingombe 1..project -High school theory practice week grade Theory labo work shop high school , - university theory practice workshop lab - instituts case studies research -college workshop workplace theory compagny workshop experience career : projection design analyse -Project Principe design -project diagram laballed schematic -Projects diagrams power circuit -Project commander control way -Project experience measure test .diagramme algorigramme logigramme organigrame ,diagrammed sequential , Concept design planogramme, algorithm . Graphcetp - purpose engineering, 1.initial sequence implentation 1. purpose of plan. Dhet yes, key switch contact -aim of plan yes, -objectivity plan yes - key delivery area 2.implementation monitoring of teaching --purpose yes - trade test QCTO license yes ,let /lep 3purpose. -4 purpose and evaluation saqa log - 5where appropriate , undertake manufacture maintence panel yes -6.1 Value Assessment saqa vs NC's infracture. 7 7.purpose dhet education career bridge stabi base phase job paychomoty yes -8 dhet ,vs sasseta accreditation Assessment mil STD , safety training merseta required gasst . -8.2 9. purpose manufacture relate theory practical componey equipment trade ton max chain load diameter trade code objy credit theory vs practice test manufacture yes, -10.purpose dhet national electronics fundamental engineering level and License trade engineering. Compare low test methode notion Hopkins -Purpose wiring electric wire way premise protection line fire -10.2 purpose engineering science module completed algebraic linearing foindamental system process fabric y yes, -engineering science theory fundamental research step y learner plan lecture plan mapping investigation Analyse, 11.pupose instrument measure trade engineering e measure control lab , -1.2 dhet vs saqa practical work experience lab workshop workplace Industrial trade purpose machine manufacturers.. -13. Dhet ncv nated lect vs saqa subject electrical principle practice , nqf level, 14.puroae dhet et vs seta sasseta skill programme management electronics,securtgradd assess threat for installation , 15.purose student information system,stui managy system revolutionized, and steing wit,cost effey interactive,collect. tshingombe fiston Wed, Sep 27, 9:13 PM (3 days ago) to DSI-Notification, TSHINGOMBEKB, tshingombe - diagram logigram algorigramme -1intialisation : start -implementation circulum knowledge circulum policy engineering planing product improvement contractual agreement e registerer and consultant e electrique Computer. Yes 2.purpose ask factor career outcome transition phase learner phase exhibition phases teach beginning. Yes 3.method material and equipment scientific guidelines assess formation Summative rubric tools assessment learner and teacher time e. Yes 4.result nantecht and minint what is technology wath are day of mining how is nanotechnology energy. Yes 4.conclusion : ent discovery Computer training t and support services to existing or prospective club safe. 5 . 1.research plan template yes, 1.1 scientific investigation project experimental. Yes 1.2 engineering type project and computer science.yes -provisionaL project implementation framework policy college and school Engineering circular assessment police , Education teach and technology subject ,subject , government municiyteam training work graduation Engineering time St peace project,expos categories.. -method material . - procedure each operationel preliminary synchtins inspect. tshingombe fiston Wed, Sep 27, 11:05 PM (3 days ago) to DSI-Notification, TSHINGOMBEKB, tshingombe -Project, CVS, resume Logigramme -1. engineering electrical implentation time table to job time experience trade . yes. -education study program St peace college.yes -work expert: title position city power training / St peace college training 02/2923. Engineering electrical visited work training experimental tasks , - award degree diploma ,saqa award panel wiring electrical , yes -skill panel wiring electrical , yes -personal projects engineering electrical visited / St peace college city power ,04/2023 ,award certificate diplomat saqa engineering.yes -organizatiom ,St peace city studies statement yes ,12 / 2022 present engineering subject n1,n2,n3,n4,n5,n6, ,n ,, 1.1summary . -1.1scope : research implentation framework study theory practy Engineering study time table Assessment allocatt implentation framework regulatority in government experimt student case time that allocation research, -Abstral students engineering design analysis trade ask knowledge city power municipality power electrique metering . -tvet CV instruction icass planning internal assessment Assessment plan subject, student analyse grid lectuy file , asssessment test practical Assessment,rubrt, yes. 1. Research requirements job study content. Research job implentation time table mean government instant visited visited labour department visited s energy council engineering. Yes .-question ask city power years theoretical practical city power and energy mineral department college, research job basic ady eligibility CVS selection crity factor training visiby appointment dicuy walleti Portofolio education college working work eligibility.. yes - 1.2 research engineering role and responsibilities research team ideal realities interested research and create new technology. Yes -1.3 duty of area search engineering years depending type of position. -engineering overseas staff position advance seniors. Yes 4.electrical ent do design and building Electrical equipment advance technology outcom including.yes 5.assessment guidelines orientation vocational Engineering ,conductor learner Engineering learner except emploie. 6. Requirements Assessment police and orientation learner guidelines vocational training engineering electrical, 7.requirement power meter technical Metering, calibration laboraisa s class 0,2, single phase certifat accreditation IEC ,@70 SaaS la capacity to calibrating large voluy electrical meter provide value meter .. yes 7.2.tesring desktop applicat police infort managet systt society low management criminals record infot Manuel improve a desk top application record jeet for police St is securite and functt safeware system department. Yes 7.research integrity framework college project and university School topic policy assy orientation Assessment research outcom teach lecture. Yes 8.tender value career totat education trade consultant bodies insuttrade test exam nated duty n 1-n6 marks time table theory. 1.scope research 1.2. 1.3 purpose overview in developing compt tendered city power supplies engineering electrical Cass study, -1.4 requirements training time table. 1.5 ask answers theory practical visited plant operations experiemental asssessor in workplace labor questionaire asked analyse subject working in developing trading company responsable , -approlriate sole Consol class cicate support trading training.. 1.6 ask quesy power to integrate sector training was satisfactory in gate information for training city power metering customer need to trade customer technology module trade t. 1.7. step need cost customer power factor theory compagny supplies need tax consumer supplies.. @.8 operationel support rendered. -to compliance labor electriy power factor test inspection compliance time table relation test installation electrical metering single phasst test trade certificate. 2.1.14.operational preliminary case study visited power city operationel requirements. 2.1.4.1 permit allowed minimum job career student permit study BT's training allocation minimum.. 21.4.2 , questionaire fact ask student in plant dangerous. 2.1 4.3 ask factor permit .. 2.1.4.2 student city power and training to delivery bill information system integration. 2 .14.6. Student city power and training to delivery bill information system.financial implentation in system exam to more gov , development social.. 2.1.4.6 metering moduttrade theory electrotech resembles instrument measure informat management syst framework commut skill mathematics Engineering. 3.1..4 , student homework, 1.4.6.1 faculty allowed system engineering lab workshop 1.14.6.2 to ,1.1.4.6 metering implentation time table module gov system.. 9.procide contextual information city power and St peace student Engineering electrical research. 9.8. compared resultat obtained statement visited investigation metering peace college time t learner. ,4.2. requirements appointment plant engineering electrical consultant provision professional. - specifical IST application. 2.1 implentation frame work regulatority 5.2 case study circular visited compared inovation. 5.2.1 module inducty safety join soldering fauy find contrase. 6.engineering. N diplomat dtin. 9.1.9.2 feedback guyser control meter readlig schedule tarrif info prepaid vendit type fault logging load shedding Libra tarrif monthly metering. 11.metering errt connet prepaid over load power accident appliances metering consumer procedure claim fault crime logged call off metering. 12. Generation measures network transmission syt time table engineering electrical, physics ,chemical eny,science engineering, drawing Engineering,apply to Cary career outcot skills to make a freelancer arrangements power city training visited engineering estimate resolution,add system explat resonement. Yes 13.2. engu system modelit n asstfor entpolice St peace was concert lectt introdu topics guide visited city power key learner appropriate, yes 14.22. Engineering electrical specifications of machinery equipment motor machinery generation battery.cerufucariin cycle durat yes.. 14.28 .compare training assessment and assugu electrique implentation time table workplace workshop academic in trade social power design factor training..yes 15.reqyieed manager class how to orgat. 15.requiremenr implentation and stabilization to training visited training Education exam training and labour inspection work inspection police school Industrial city .. - n diplot saqa understaking numerical, 40.1 practical school St peace college workplace workclass class at peace practical.orientation . 50.1 built making , Subject module overview colleges lab workshop ttheory police ..city power tshingombe fiston Thu, Sep 28, 4:28 PM (2 days ago) to DSI-Notification, TSHINGOMBEKB, tshingombe 1 .CVS Title government and Education job Engineering college. 1.conte t engineering electrical career project Project officer outcom e legislation government engineering gov city .yes 2.2 abstract job work career category job skills.yes 3. Entry Engineering electrical trade infractuture implentation support. Yes 4. Purpose asssessor .vyes 4.1 case study how make calculation for a distribution substation. Yes - 5.requirement substation , 5 purpose and required , advance basic. Yes 6. Requirements power station and central system appliances TV reliable , Yes 8.requirement Dimensioning workplace. Yes 8.2 fonctionalite principal . Note cacul office , bureau studi ,sabs ,ECB,realii calcul test Yes 9.reauired domain application distribution network . Yes 10.of electromagnetic induction to solve problem. Yes 11required energy dimensioning, Yes 15.1 rate discharge required need adjusting energy determine secondt control power requirements. Yes 16. Required functions function. Yes 17. Required report current measurement. 18.required energitcal energy and electro energy mass government weight Gass products. Yes 19.1 ..circuit diagram of analyse energy meter , ATM term standard automate teller machine. 20.require case diagrams for arm systeme. Yes 2.1 required ent Electrical machinery motory motor and generation Nomenclature assembly,step Yes 2.2 required calculation of induction in the teath of stator. - required ,an experiment in in transformer rewinding an winding instructable.step 2.5 requirements engineering electrical work department orientation wastage life assess life cycle analyse is methology association commercial products or services for instance case of manufacture product impact are Assessment form row material. Recycling final. - seta form assessor saqa - city power structure organisation inovation. -Strong cities network , - Education and for innovation power of digital technologies, -30.. required design analysis Engineering science energy, engineering chemistry, engineering physics biophysics science electrical energy.. 30.1 robot dynamic kinematics and control calcule Dimensioning nomenclature operator kinematics. 30.2 requires Industrial research means planned research critel innovative grow ,equity components compagny appliances sti stick reports. 32.rewuire total energy systems required load current at point engineering electrical faculty tshingombe fiston Thu, Sep 28, 5:03 PM (2 days ago) -Requirements flow down from level1.system design processes1.1 requirements definition process ,1.1.1stskehold expectation definition yes1.1.3technical solution tshingombe fiston Fri, Sep 29, 7:19 PM (14 hours ago) to DSI-Notification, TSHINGOMBEKB, tshingombe - Algorigramme, logigram -Key lock,, -Equation key equation lock comparable logic K1.1 x +k.2.1+kn ..= k implentation K1.1x+k.2.1+kn..=k.implementation ________________________________ Add. Method value : Substitute value: key Compare value : Step operator .. ________________________________ Way key switch K.1. tshingombe fiston Fri, Sep 29, 9:14 PM (12 hours ago) to TSHINGOMBEKB, tshingombe, DSI-Notification Outcome, education technology technology electrique ,electrotechnology EIC EIC : electrotechnology : electrical international commissioner rules , Commissioner electrical international,commission energy,,commission ligthning,, system international physic ,chemical ,, Construction electric association ,information rules Labels, Power empower : fundamental system, process implentation phase operationel step task project: Schematic diagram: principal game Technologie ,supplies power purpose power : rules attorney: machine system control process Project fabric. - power commissioning code standard Value nominal operationel work : -value minimal operationel work labour: -value value cut operationel , Value selected , choice basic advanced purpose diagram design Key lock contacting value outcom technologie are Cree. -principle schematic: schedule Orientation projection flow share line manager system process purpose horizontal vertical team line flow -Purpose purpose : 1.1,,1.2,,1.3,,1 5.. operationel task ,logic diagram logigram , organigrame organisation orientation planing supervisor - design organigrame: Way key switch organisation supervisor planing way , 2 way ,3,way block Mono schedule schematic,4 way switch suplie power recall delay relay o'clock dimer -Organigrame schematic blocks,convert information : ,,Organigrame board metering , logigram , algorigramme.bod distribution board , distribution system design . ________________________________ - equation logic : state logic ,0or 1, voltage 220,380 F1=0, F2=0,F3=0, circuit breaker MCB MCB1=0,MCB2=0,MCB=3, Line 1,2,3 state = 0, F1+F2+F3, ,metering kWh=0 , kvarh=0,KVA =o cos meter= 0 Circuit breaker ,over load rcdbo =0, Db box system db=0, operationel technologie, Equation logic Db= F1.+MCB+kvar+kwh Power supply, Db = lights+ outlet socket+guyzer+ Sw1=1 light = 1, sw2=1,sw3=1,SW 6, ,SW 5, ________________________________ - organisation dol ,reverse. Load. Km1= F1+so+(S1+km1). Motor Km2=F2+s0(S2+km2).. ________________________________ K1m = F1+so(S1+km1).km2 K2m=f2+so(S2+km2).km1 ________________________________ K start= F1+so(S1+km1).k d K delta=F2+so(S1+km2).ks ________________________________ On line generator ,,transformer transmitters Kgenerator =F1+so(S1+kg1).kg 2 Kgenerator=F2+so(s2+kg2).kg.2 Transformer = F,=,1,(Q+break+Q).(Q+break+Q)+transfo + Q+Brak+Q+ ________________________________ -Algorigramme: operationel system Initial f1.start ..F1=1 yes , or not initialisation,F2=1,yes ,or egual =o initial Initiation , f 3=1,yes or equal=0 initial , .,SW = 1:,yes ,,km = 1, yes,kg=1 yes step or reininitialisatiin . Db box = ,1 ,,D's=,1 activation atstem End procedure ,, ________________________________ Logigramme algebraic boolen , Coventer Binaire 2. 0,1,decimal base 10, hexadecimal 16, Input / out put logic byt Sw1=0,sw2=0,sw3=0,SW=0/ 0000, Base 10,,base 16 S1=0,S2=0,S3=0, S4=0,=0/0000 Km=0,km=0,km=o,km=0,/0000 Kg=0,kg=0,km=0,Km=0/ 0000 ________________________________ , Fortran CLS program,PLC 10.Print sw1 20.Print sw2 30.print sw3 40.print sw4 50 print S1, 60 print S2 70 print S3 80 print s4 90 print km 100 .print kg 110.print t Input ="sw1", sw2,sw3,sw4,Se Input = S1, S2,S4,S4,, Input = km, Input = kg If " sw1"= 1, I = Else Show String ________________________________ Robotic research operationel Algo pin address value scater position _- - tshingombe fiston Fri, Sep 29, 11:40 PM (10 hours ago) to DSI-Notification, TSHINGOMBEKB, tshingombe ________________________________ Analyse design ,analyse circuit. Sequence , circulum purpose - call key display sw1,sw2,sw3,sw4 -call and recall ,db ,Q - call and recall current sw1,sw2,sw4 - call way key + Call km,call kg ,call. -Module call and recall sw1 task ,call task ,sw2 ,call task sw1 required contact task sw1 = 0, sw1=0, Task km Call pression pressosta kp,call manosta ,call detector call,termomete kt Relay Current exp -Module calculator operationel, call task ,call , sw1 operationel logic add, substraction , multiplication,division task Module inverter ,module multiplex , Integration circuit module switch , Call pression under pressure, Call , module calcule step task ,S2,S2,s3s4,sequence pression ,selector Call pin address ,transistor thyristor comande task , Call module matrices ,Display module.. operationel system call recall task ,multi task multi use, mmono task, call windows,, operating system call motor lecture current disc tape magnetic electromagnetic memory card , reader card call ,sub system - e: Release resultat statement and finalize award diploma./irregularilarity case .re marker ________________________________ tshingombe fiston Sat, Sep 23, 2023 at 10:06 AM To: TSHINGOMBEKB TSHITADI , centraloffice@qcto.org.za, secretarydrr@saqa.co.za, Qualification@qcto.org.za, Mahlangu.L@qcto.org.za, learnerenrolments@qcto.org.za, csd@treasury.gov.za, callcentre@dhet.gov, modiba.d@dhet.co.za, saqainfo@saqa.org.za, dfqeas@saqa.co.za, DGRegistry@treasury.gov.za, deregistrations@cipc.co.za, DSI-Notification On Thu, Jun 1, 2023 at 1:38 PM tshingombe fiston wrote: QCTO APPLICATION FORM FOR DEVELOPMENT, REVIEW, REALIGNMENT/ DE-ACTIVATION/ REPLACEMENT OF OCCUPATIONAL QUALIFICATIONS/PART QUALIFICATIONS/SKILLS PROGRAMMES IN LINE WITH THE OQSF POLICY (2021) OCCUPATIONAL QUALIFICATION TYPE (NOMENCLATURE) NB: Only Quality Partners (QP) may complete this form SECTION A:SPECIFY TYPE OF DEVELOPMENT REQUESTED Tick the applicable box in the table below: TYPE DEVELOP REVIEW REALIGN DE-ACTIVITATE REPLACE QUALIFICATION N engineering PART- QUALIFICATION n/engineerin SKILLS PROGRAMME engineering SECTION B: QUALIFICATION DETAILS B1. Occupation and/or specialisation that this Occupational Qualification relates to: QUALIFICATION TYPE OCCUPATION/SKILLS PROGRAMMETITLE OFO CODE (state if none related can be found) SPECIALISATION

TITLE SETA CHAMBER SIC CODE 1. Panel waring 2.n engineerig electrical 3. 4. Link to access OFO: https://www.dhet.gov.za/Skills%20Development/Updated%20FINAL%20OFO%20VERSION%202021.xls Link to access SIC Codes: https://www.dhet.gov.za/SiteAssets/Publication%20of%20New%20Seta%20Landscape.pdf B2. Details of Qualification(s)/recorded Trades affected where applicable: QUALIFICATION ID/RECORDED TRADE ID QUALIFICATION TITLE/RECORDED TRADE TITLE LEVEL CREDITS QUALITY PARTNER (QP) Engineering electricl Lev,5/n4 n Panel wiring Lev2 B3. Learnerships registered against the above stated qualification/trade: LEARNERSHIP REGISTRATION NUMBER LEARNERSHIP TITLE NQF LEVEL Engineering electrical N4/lev5 B4. Does the intended occupational qualification relate to relevant economic drivers? For each area marked yes, provide evidence Referencecurrent source, with page number, where need was identified Tick YES or NO. 4.1 Listed in the Economic Reconstruction and Recovery Plan (ERRP)? Yes yes No Reference 4.2 National Development Plan Yes yes No Reference 4.3 New Growth Path Yes yes No Reference 4.4 Industrial Policy Action Plan Yes yes No Reference 4.5 Economic drivers in Strategic Infrastructure Projects (SIPs) Yes yes No Reference 4.6 Reconfiguration and Reconstruction of N4-N6 part qualifications Yes yes No Reference 4.7 DHET Scarce Skills List (List of Occupations in High Demand) Yes yes No Reference 4.8 Legacy/Historically OQSF Qualifications Yes yes No Reference 4.9 Other priorities Yes yes No Reference B.5 Provide a rationalefor occupation/specialisation (i.e. describe and explain need, benefit, typical learners) … B.6 Specify regulatory bodies, professional bodies, associations,labour or employer organisations and/or other stakeholders that are involved/interested in this occupation: … SECTION C:APPLICANT DETAILS Complete the table QUALITY PARTNER DETAILS NAME OF QUALITY PARTNER …st peace college NAME AND SURNAME OF APPLICANT …tshingombe tshitadi DESIGNATION OF APPLICANT … EMAIL ADDRESS OF APPLICANT Tshingombekb@gmail.com… APPLICANT SIGNATURE …tshgombe/// DATE …01/06/2023 SECTION D:APPLICATION SUBMISSION Email completed and signed application form to: qualifications@qcto.org.za FINAL VERIFICATION REPORT TEMPLATE NB: This scoping report is to be compiled by the QP and is submitted to the QCTO within 10 working days after the Final VerificationMeeting. 1. QCTO approved application for which the Final Verification Meeting was conducted: OCCUPATION engineering OFO CODE en SPECIALISATION n 2. Final Verification Meeting details: DATE 11 VENUE 1 TIME n 3. Details of Qualification for which Final Verification is conducted: NO QUALIFICATION TYPE QUALIFICATION TITLE NQF LEVEL CREDITS 1. Trade theory electrical Trade electrical engineering N4/lev5 n 4. Details of Part-Qualification for which Final Verification is conducted: NO QUALIFICATION TYPE QUALIFICATION TITLE NQF LEVEL CREDITS 1. Trade theory /panel wiring Engineering n N5 n 2. 5. Details of Skills Programme for which Final Verification is conducted: NO QUALIFICATION TYPE QUALIFICATION TITLE NQF LEVEL CREDITS 1. Engineering electrical Engineeeeeeirn n N4/lev 5 n 2. Panel wiring electrica Trade theory Lev n 6. Analysis of stakeholders consulatedforFinal Verification: NO CLASSIFICATION NUMBER OF PARTICIPANTS WHO WERE INVITED TO THE MEETING NUMBER OF PARTICIPANTS WHO ATTENDED THE MEETING 1. WORKPLACE PRACTITIONER 4 4 2. PROFESSIONAL BODY/NON-STATUTORY BODY 4 4 3. REGULATORY/STATUTORY BODY 4 4 4. EMPLOYER ASSOCIATION 4 4 5. EMPLOYEE ASSOCIATION/LABOUR UNION 4 4 6. EDUCATION AND TRAINING PROVIDER (PUBLIC) 4 4 7. EDUCATION AND TRAINING PROVIDER (PRIVATE) 4 4 8. ASSESSMENT SPECIALIST (EXAMINER/ MODERATOR WITH EXPERIENCE) 4 4 9. CURRICULUM DEVELOPMENT SPECIALIST 4 4 10. TEACHING AND LEARNING SPECIALIST 4 4 11. COUNCIL ON HIGHER EDUCATION REPRESENTATIVE 4 4 12. HIGHER EDUCATIONINSTITUTION REPRESENTATIVE 4 4 13. OTHER 4 4 14. TOTAL 56 56 NB: Attach Final Verification Meeting Attendance Register in the QCTO prescribed format 7. Details of Subject Matter Expert who will facilitate the development of Qualification/Part Qualifications/Skills Programme: NAME SURNAME EMAIL ADDRESS CELL NUMBER TELEPHONE NUMBER tshingombe tshitadi tshingombekb@gmail.com Comments … 8. Quality partner declaration: I, …(Name and Surname - Quality Partner Representative), declare that the information provided above is an accurate reflection of the proceedings of the scoping meeting as detailed in this report. Signed on this …02 day of 6…20…23 at …jhb ______________________________ learner engineeering electrical 2022/10/28 12:00:00 AM 2022/11/16 12:00:00 AM 4 no meeting rquiremnt Never been Employed Before Education Engineering electrical trade R 950 000.00 - R 1 100 000.00 Engineering electrical 2023/10/20 12:00:00 AM 2023/10/20 12:00:00 AM 6 Engineering electrical job close tendered ______________________________ Follows us on The requested URL was rejected. Please consult with your administrator. Your support ID is: 9957715859926169674 • o Our Company Company Information Leadership Investors Sustainable Development CSI Media Room PAIA Eskom Heritage Photo Gallery Video Clips o About Electricity Electricity Tips Electricity Technologies Eskom Power Series Renewable Energy Facts & Figures Visitor Centers MODIS Fire Alerts o What we're doing Electricity Generation New Build Transmission Development Plan Ancillary Services GCCA Report Supply Status Info Site For IPPs School Of Welding Eskom initiatives o IDM Integrated Demand Management Energy Advice Eskom Solar Water Heating Programme Measurement Verification o Customer Care CS Online Tarrifs And Charges MYPD3 Customer Service Information Subscribe CS Mobile Customer Feedback Customer Care Video Clips IDM o Careers Vacancies o Tenders Eskom Purchasing Policies Tender Process Whats Out To Tender Supplier Registration Insurance Policies Procedures BBBEE Certificate Copyright © 2024 Eskom Holdings SOC Ltd Reg No 2002/15527/30. All rights reserved. | Terms of use Webmail | Media Info | Sustainability | Job Opportunities | Contact Us 1 Overview Support Support Cases Detail Case #110094368 Open Created date: 25 Jun 2024, 13:04 Contact: Tshingombe fiston Account: Tshingombe engineering (Pretoria, ZA) Resolving agent: Assignment in progress Request subject: hello dear can fnd Request details: hello dear can fnd Conversation feed 2 Attachments and 1 Comments Agent Customer Comment * Type your comment here. Upload File Upload a file with a size limit up to 30 MB. Drop file or browse good like j Posted by: Tshingombe fiston 25 Jun 2024, 13:06 Incident logged on 2024, supplie letter tendered.docx Posted by: Tshingombe fiston 25 Jun 2024, 13:06Size: 355 KB Incident logged on 2024, supplie letter tendered.docx Posted by: Tshingombe fiston 25 Jun 2024, 13:04Size: 355 KB • • • • • • • mySchneider Terms of Use • • Legal information • Privacy Policy • Cookie Notice • Change your cookie settings ©2024, Schneider Electric mySchneider An Unexpected Error has occurred. • Your request failed. Please contact your system administrator and provide the date and time you received the error and this Exception ID: 5A463E2A. Click your browser's Back button to continue. Return to my original page Skip to main content Home My Jobs Search Jobs FT My Applications Applications Saved Jobs Showing 28 Jobs Field Service Engineer - UPS 26849 May 29, 2024 No Longer Under Consideration Johannesburg, Gauteng, ZAF, 1619 Power Systems Engineering Specialist (Expert) 25412 May 19, 2024 No Longer Under Consideration Milton, Ontario, CAN, L9T 5C3 Manager Engineering Product Design Connected Solutions 25058 May 19, 2024 No Longer Under Consideration Santo Domingo, DOM Field Service Engineer - UPS 26105 May 19, 2024 No Longer Under Consideration Cape Town, ZAF, 7550 Service Centre Helpdesk Coordinator 20686 Mar 6, 2024 No Longer Under Consideration Johannesburg, Gauteng, ZAF, 1619 Field Services Engineer - UPS 20228 Mar 2, 2024 No Longer Under Consideration Durban, ZAF, 4017 Field Services Engineer - UPS 19852 Feb 10, 2024 No Longer Under Consideration Cape Town, ZAF, 7550 Quality Auditor, Training program, 3rd Shift 19275 Feb 9, 2024 Processed Rumford, Rhode Island, USA, 02916 Lead Power Systems Engineer 19197 Jan 31, 2024 No Longer Under Consideration El Paso, Texas, USA, 79912 Product Manager - Electrical Working Training & Remote Services 18926 Jan 31, 2024 No Longer Under Consideration Moon Township, Pennsylvania, USA, 15108 Finance Early Talent Leadership Development Program (m/w/d) 18647 Jan 31, 2024 No Longer Under Consideration Bonn, DEU, 53115 Finance Early Talent Leadership Development Program 18817 Jan 31, 2024 No Longer Under Consideration Budapest, HUN, 1123 Site Manager South Africa - Customer Projects 12131 Dec 16, 2023 No Longer Under Consideration Johannesburg, Gauteng, ZAF, 1619 Engineering Technician - Mechanical 13241 Dec 11, 2023 No Longer Under Consideration Wilsonville, Oregon, USA, 97070-8247 Lead Engineer Power Conversion 14106 Dec 10, 2023 No Longer Under Consideration Bonn, DEU, 53115 Senior Power Electronics HW Engineer 5488 Dec 10, 2023 No Longer Under Consideration Bonn, DEU, 53115 Mechanical Design Engineer - Electrical Vehicle (m/w/d) 14843 Dec 10, 2023 No Longer Under Consideration Bonn, DEU, 53115 Manager Engineering - Engineering Center (Eplan) ESS EMEA 12431 Dec 10, 2023 No Longer Under Consideration Hengelo, NLD, 7559 Senior Electrical Project Engineer 15841 Dec 5, 2023 Job Filled - Other Candidate Selected Dublin, IRL, 4 Applications Engineer 13964 Dec 5, 2023 No Longer Under Consideration Mascot, New South Wales, AUS, 2020 12 > Powered by #WhatsNextForYou ur profile information and skills to increase your chances of getting hired. • ______________________________ ______________________________ • Profile Review • • Skill Assessment Fiston Tshingombe tshingombefiston@gmail.com Email https://www.linkedin.com/in/tshingombe _tshitadi-9b6204123 Links Johannesburg, South Africa Location +27725298946 Phone Work Experience1 Engineering Jacobs Engineering Feb 2020 - Present enginerring electrical design analyse investigation component Education1 UNIVERSITÉ De Kinshasa UNIKIN Certificate, Engineering Oct 2020 - Jan 2023 Study Program st peace college 10/2020 - Present, jhb r Courses engineering electrical Awards1 Panel wiring electrical St peace college Mar 2024 Panel wiring award certificate. Outlet socket. db . Patents1 Ccma laboure Mar 2024 Ccma labour Publications1 Education technology Tshingombe Mar 2024 Education technologie trade electrical elementaire fundamental Self-assess your skills to provide additional context to recruiters reviewing your application and profile. Skills relevant to your applications Transcript of Tuesday, June 25, 2024, 12:47:51 pm. Operator: Salome Kutanda. Visitor: tshingombe Inbox LiveChat 1:55 PM (0 minutes ago) to me Chat transcript Name: tshingombe Contact number: 0725298946 E-mail: tshingombefiston@gmail.com Gender Male Are you a Student Salome Kutanda Tue, 25 Jun 2024 12:47:51 SAST Hello. How may I help you? tshingombe 12:50 i need advice career development n diploma engineering electrical , back log isita certificate graduate , transcript record , applying to depatment career , student st peace college,, job experimental theoretical practical , career tshingombe archived the chat 12:52 tshingombe left the following comment: good day 12:53 tshingombe rated the chat as good 12:53 Was your case resolved during the chat? Yes Did the Advisor discuss a follow-up plan with you? Yes Conversation happened at: https://www.careerhelp.org.za/ Powered by g Incidence eaton employement cobs Engineering (Engineering) Career visited job to job Visited applie trade to trade ,, trade to cpd continue stage internership apprentiship report learner Visited apple training to training re development reform job experimental student outcome and internal service outcome exhibition internership pc6 [Pick the date]

Portofolio career research college engneering carerjoin gov Tshingombe tshitadi fiston 2023 department of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programme, exposition science -2.programme research development support : St peace college lecture and learner development under planning. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portfolio documents systems integrity police academic, -2.1. purpose: innovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , innovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system control evaluation system 2.1.2 knowledge: innovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum, value tax , return studies and Examine electro technology engineering time table assessment Completed research laniaries system technology value entry lecture exam nated vs. saqa vs qcto linearism system electro technology power fundamental job duty job maximum, job value minimum trade operational, task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource human maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking curriculum system implantation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electro technology ,education technology System outcome , trading education technology systems power factor demand system education , efficiency system assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation: system teaches sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used company manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatory Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic science infrastructure: implantation of research innovation mission equipment College equipment framework theory practical lab workshop workplace implantation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatory of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue power plant fuel used national treasure sars department of energy mandatory ensure private sector particpr in power generation , Meet national skill fund,, national research fund ,, Visa permit tshingombe fiston Wed, Sep 20, 5:31 PM (10 days ago) to TSHINGOMBEKB, tshingombe, DSI-Notification partment of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programe, exposition science -2.programme research development support : St peace college lecture and learner development under planing. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portofilio documents systeme integrity police academic, -2.1. purpose : inovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , inovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system controle evaluation system 2.1.2 knowledge: inovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum,value tax , return studies and Examin electrotechnology engineering time table assessment Completed research linearise system technology value entry lecture exam nated vs saqa vs qcto linearise system electrotechnology power fundamental job duty job maximum,job value minimum trade operational,task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource humain maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking circulum system implentation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electrotechnology ,education technology System outcom , trading education technology systems power factor demand system education , efficiency systeme assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation : system teach sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used campagny manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatority Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic scieny infractuture: implentation of research inovation mission equipment College equipment framework theory practical lab workshop workplace implentation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatority of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue npower plant fuel used national treasure sars department of energy mandatory ensure private sector particpr in power generation , Meet national skill fund,, national research fund ,, 1 to tahitaditshingombe, TSHINGOMBEKB, me, tshitaditshingombe The Electrical Conformance Board of South Africa takes it's role as the national umbrella body for the electrical sector seriously. We constantly try to help and answer all questions as quickly as possible and also help to mediate between conflicting parties. Please be aware that the ECB is a Not for Profit organisation and as such we are limited by our resources and budget to help you. Please be patient as we have in excess of 7,000 cases each year and we want to ensure each case gets the time it deserves. If you are happy with the work we do for you and the industry please feel free to send us a donation. We really appreciate everyone of our contributors that help us make the electrical sector a safer. Members Area Change Email Change Password Logout Settings Set Preferences Campaign Subscription Center Change Email Change Password Quick Search Type Date Number PO/Check Number Set Up Members Area Billing Print a Statement See A/R Register See All Transactions Pay by Credit Card Support Contact Support See Support Cases Edit Your Profile Custom SuiteSocial Registration related updates Upload Files Registration Update Certificates of Compliance CoC's in Progress View, Confirm or Cancel a CoC Buy eCoC Credits View eCoC Credits Begin a CoC (until July 2021) Begin a CoC Sans 10142-1 Ed3 Quick View Outstanding Balance R0 Open Cases 0 Contact Us Home redirect Members Area Change Email Change Password Logout Print Individual Statement department of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programme, exposition science -2.programme research development support : St peace college lecture and learner development under planning. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portfolio documents systems integrity police academic, -2.1. purpose: innovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , innovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system control evaluation system 2.1.2 knowledge: innovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum, value tax , return studies and Examine electro technology engineering time table assessment Completed research laniaries system technology value entry lecture exam nated vs. saqa vs qcto linearism system electro technology power fundamental job duty job maximum, job value minimum trade operational, task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource human maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking curriculum system implantation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electro technology ,education technology System outcome , trading education technology systems power factor demand system education , efficiency system assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation: system teaches sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used company manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatory Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic science infrastructure: implantation of research innovation mission equipment College equipment framework theory practical lab workshop workplace implantation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatory of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue power plant fuel used national treasure sars department of energy mandatory ensure private sector particpr in power generation , Meet national skill fund,, national research fund ,, Visa permit partment of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programe, exposition science , - Value financial tax system: 2.2.3: strategies: strategies phasing module tasking circulum system implentation levels grading lecture Meet national skill fund,, national research fund ,, Technology design engineering,systems engineering, 1..project - - purpose engineering, to DSI-Notification, TSHINGOMBEKB, tshingombe 1 .CVS Title government and Education job Engineering college. -Requirements flow down from level1.system design processes1.1 requirements definition process ,1.1.1stskehold expectation definition yes1.1.3technical solution - Algorigramme, logigram -Key lock,, -Equation key equation lock comparable logic K1.1 x +k.2.1+kn ..= k implentation K1.1x+k.2.1+kn..=k.implementation ______________________________ Add. Method value : Substitute value: key Compare value : Step operator .. ______________________________ Way key switch K.1. Outcome, education technology technology electrique ,electrotechnology EIC EIC : electrotechnology : electrical international commissioner rules , Commissioner electrical international,commission energy,,commission lingthning,, system international physic ,chemical ,, Construction electric association ,information rules Labels, Power empower : fundamental system, process implentation phase operationel step task project: Schematic diagram: principal game Technologie ,supplies power purpose power : rules attorney: machine system control process Project fabric. - power commissioning code standard Value nominal operationel work : -value minimal operationel work labour: -value value cut operationel , Value selected , choice basic advanced purpose diagram design Key lock contacting value outcom technologie are Cree. -principle schematic: schedule Orientation projection flow share line manager system process purpose horizontal vertical team line flow -Purpose purpose : 1.1,,1.2,,1.3,,1 5.. operationel task ,logic diagram logigram , organigrame organisation orientation planing supervisor - design organigrame: Way key switch organisation supervisor planing way , 2 way ,3,way block Mono schedule schematic,4 way switch suplie power recall delay relay o'clock dimer -Organigrame schematic blocks,convert information : ,,Organigrame board metering , logigram , algorigramme.bod distribution board , distribution system design . ______________________________ - equation logic : state logic ,0or 1, voltage 220,380 F1=0, F2=0,F3=0, circuit breaker MCB MCB1=0,MCB2=0,MCB=3, Line 1,2,3 state = 0, F1+F2+F3, ,metering kWh=0 , kvarh=0,KVA =o cos meter= 0 Circuit breaker ,over load rcdbo =0, Db box system db=0, operationel technologie, Equation logic Db= F1.+MCB+kvar+kwh Power supply, Db = lights+ outlet socket+guyzer+ Sw1=1 light = 1, sw2=1,sw3=1,SW 6, ,SW 5, ______________________________ - organisation dol ,reverse. Load. Km1= F1+so+(S1+km1). Motor Km2=F2+s0(S2+km2).. ______________________________ K1m = F1+so(S1+km1).km2 K2m=f2+so(S2+km2).km1 ______________________________ K start= F1+so(S1+km1).k d K delta=F2+so(S1+km2).ks ______________________________ On line generator ,,transformer transmitters Kgenerator =F1+so(S1+kg1).kg 2 Kgenerator=F2+so(s2+kg2).kg.2 Transformer = F,=,1,(Q+break+Q).(Q+break+Q)+transfo + Q+Brak+Q+ ______________________________ -Algorigramme: operationel system Initial f1.start ..F1=1 yes , or not initialisation,F2=1,yes ,or egual =o initial Initiation , f 3=1,yes or equal=0 initial , .,SW = 1:,yes ,,km = 1, yes,kg=1 yes step or reininitialisatiin . Db box = ,1 ,,D's=,1 activation atstem End procedure ,, ______________________________ Logigramme algebraic boolen , Coventer Binaire 2. 0,1,decimal base 10, hexadecimal 16, Input / out put logic byt Sw1=0,sw2=0,sw3=0,SW=0/ 0000, Base 10,,base 16 S1=0,S2=0,S3=0, S4=0,=0/0000 Km=0,km=0,km=o,km=0,/0000 Kg=0,kg=0,km=0,Km=0/ 0000 ______________________________ , Fortran CLS program,PLC 10.Print sw1 20.Print sw2 30.print sw3 40.print sw4 50 print S1, 60 print S2 70 print S3 80 print s4 90 print km 100 .print kg 110.print t Input ="sw1", sw2,sw3,sw4,Se Input = S1, S2,S4,S4,, Input = km, Input = kg If " sw1"= 1, I = Else Show String ______________________________ Robotic research operationel Algo pin address value scater position _- - ______________________________ Analyse design ,analyse circuit. Sequence , circulum purpose - call key display sw1,sw2,sw3,sw4 -call and recall ,db ,Q - call and recall current sw1,sw2,sw4 - call way key + Call km,call kg ,call. -Module call and recall sw1 task ,call task ,sw2 ,call task sw1 required contact task sw1 = 0, sw1=0, Task km Call pression pressosta kp,call manosta ,call detector call,termomete kt Relay Current exp -Module calculator operationel, call task ,call , sw1 operationel logic add, substraction , multiplication,division task Module inverter ,module multiplex , Integration circuit module switch , Call pression under pressure, Call , module calcule step task ,S2,S2,s3s4,sequence pression ,selector Call pin address ,transistor thyristor comande task , Call module matrices ,Display module.. operationel system call recall task ,multi task multi use, mmono task, call windows,, operating system call motor lecture current disc tape magnetic electromagnetic memory card , reader card call ,sub system - Registered Party:Project 31567 STPEACECOLLEGE /CITYPOWER TSHINGOMBE Balance 0.00 ZAR *Statement Date Start Date Show Only Open Transactions .CVS Title government and Education job Engineering college. 1.conte t engineering electrical career project Project officer outcom e legislation government engineering gov city .yes 2.2 abstract job work career category job skills.yes 3. Entry Engineering electrical trade infractuture implentation support. Yes 4. Purpose asssessor .vyes 4.1 case study how make calculation for a distribution substation. Yes - 5.requirement substation , 5 purpose and required , advance basic. Yes 6. Requirements power station and central system appliances TV reliable , Yes 8.requirement Dimensioning workplace. Yes 8.2 fonctionalite principal . Note cacul office , bureau studi ,sabs ,ECB,realii calcul test Yes 9.reauired domain application distribution network . Yes 10.of electromagnetic induction to solve problem. Yes 11required energy dimensioning, Yes 15.1 rate discharge required need adjusting energy determine secondt control power requirements. Yes 16. Required functions function. Yes 17. Required report current measurement. 18.required energitcal energy and electro energy mass government weight Gass products. Yes 19.1 ..circuit diagram of analyse energy meter , ATM term standard automate teller machine. 20.require case diagrams for arm systeme. Yes 2.1 required ent Electrical machinery motory motor and generation Nomenclature assembly,step Yes 2.2 required calculation of induction in the teath of stator. - required ,an experiment in in transformer rewinding an winding instructable.step 2.5 requirements engineering electrical work department orientation wastage life assess life cycle analyse is methology association commercial products or services for instance case of manufacture product impact are Assessment form row material. Recycling final. - seta form assessor saqa - city power structure organisation inovation. -Strong cities network , - Education and for innovation power of digital technologies, -30.. required design analysis Engineering science energy, engineering chemistry, engineering physics biophysics science electrical energy.. 30.1 robot dynamic kinematics and control calcule Dimensioning nomenclature operator kinematics. 30.2 requires Industrial research means planned research critel innovative grow ,equity components compagny appliances sti stick reports. 32.rewuire total energy systems required load current at point engineering electrical faculty tshingombe fiston Thu, Sep 28, 5:03 PM (2 days ago) -Requirements flow down from level1.system design processes1.1 requirements definition process ,1.1.1stskehold expectation definition yes1.1.3technical solution tshingombe fiston Fri, Sep 29, 7:19 PM (14 hours ago) to DSI-Notification, TSHINGOMBEKB, tshingombe -Algorigramme, logigram -Key lock,, -Equation key equation lock comparable logic K1.1 x +k.2.1+kn ..= k implentation K1.1x+k.2.1+kn..=k.implementation ______________________________ Add. Method value : Substitute value: key Compare value : Step operator .. ______________________________ Way key switch K.1. tshingombe fiston Fri, Sep 29, 9:14 PM (12 hours ago) to TSHINGOMBEKB, tshingombe, DSI-Notification Outcome, education technology technology electrique ,electrotechnology EIC EIC : electrotechnology : electrical international commissioner rules , Commissioner electrical international,commission energy,,commission ligthning,, system international physic ,chemical ,, Construction electric association ,information rules Labels, Power empower : fundamental system, process implentation phase operationel step task project: Schematic diagram: principal game Technologie ,supplies power purpose power : rules attorney: machine system control process Project fabric. - power commissioning code standard Value nominal operationel work : -value minimal operationel work labour: -value value cut operationel , Value selected , choice basic advanced purpose diagram design Key lock contacting value outcom technologie are Cree. -principle schematic: schedule Orientation projection flow share line manager system process purpose horizontal vertical team line flow -Purpose purpose : 1.1,,1.2,,1.3,,1 5.. operationel task ,logic diagram logigram , organigrame organisation orientation planing supervisor - design organigrame: Way key switch organisation supervisor planing way , 2 way ,3,way block Mono schedule schematic,4 way switch suplie power recall delay relay o'clock dimer -Organigrame schematic blocks,convert information : ,,Organigrame board metering , logigram , algorigramme.bod distribution board , distribution system design . ______________________________ - equation logic : state logic ,0or 1, voltage 220,380 F1=0, F2=0,F3=0, circuit breaker MCB MCB1=0,MCB2=0,MCB=3, Line 1,2,3 state = 0, F1+F2+F3, ,metering kWh=0 , kvarh=0,KVA =o cos meter= 0 Circuit breaker ,over load rcdbo =0, Db box system db=0, operationel technologie, Equation logic Db= F1.+MCB+kvar+kwh Power supply, Db = lights+ outlet socket+guyzer+ Sw1=1 light = 1, sw2=1,sw3=1,SW 6, ,SW 5, ______________________________ - organisation dol ,reverse. Load. Km1= F1+so+(S1+km1). Motor Km2=F2+s0(S2+km2).. ______________________________ K1m = F1+so(S1+km1).km2 K2m=f2+so(S2+km2).km1 ______________________________ K start= F1+so(S1+km1).k d K delta=F2+so(S1+km2).ks ______________________________ On line generator ,,transformer transmitters Kgenerator =F1+so(S1+kg1).kg 2 Kgenerator=F2+so(s2+kg2).kg.2 Transformer = F,=,1,(Q+break+Q).(Q+break+Q)+transfo + Q+Brak+Q+ ______________________________ -Algorigramme: operationel system Initial f1.start ..F1=1 yes , or not initialisation,F2=1,yes ,or egual =o initial Initiation , f 3=1,yes or equal=0 initial , .,SW = 1:,yes ,,km = 1, yes,kg=1 yes step or reininitialisatiin . Db box = ,1 ,,D's=,1 activation atstem End procedure ,, ______________________________ Logigramme algebraic boolen , Coventer Binaire 2. 0,1,decimal base 10, hexadecimal 16, Input / out put logic byt Sw1=0,sw2=0,sw3=0,SW=0/ 0000, Base 10,,base 16 S1=0,S2=0,S3=0, S4=0,=0/0000 Km=0,km=0,km=o,km=0,/0000 Kg=0,kg=0,km=0,Km=0/ 0000 ______________________________ , Fortran CLS program,PLC 10.Print sw1 20.Print sw2 30.print sw3 40.print sw4 50 print S1, 60 print S2 70 print S3 80 print s4 90 print km 100 .print kg 110.print t Input ="sw1", sw2,sw3,sw4,Se Input = S1, S2,S4,S4,, Input = km, Input = kg If " sw1"= 1, I = Else Show String ______________________________ Robotic research operationel Algo pin address value scater position _- - tshingombe fiston Fri, Sep 29, 11:40 PM (10 hours ago) to DSI-Notification, TSHINGOMBEKB, tshingombe ______________________________ Analyse design ,analyse circuit. Sequence , circulum purpose - call key display sw1,sw2,sw3,sw4 -call and recall ,db ,Q - call and recall current sw1,sw2,sw4 - call way key + Call km,call kg ,call. -Module call and recall sw1 task ,call task ,sw2 ,call task sw1 required contact task sw1 = 0, sw1=0, Task km Call pression pressosta kp,call manosta ,call detector call,termomete kt Relay Current exp -Module calculator operationel, call task ,call , sw1 operationel logic add, substraction , multiplication,division task Module inverter ,module multiplex , Integration circuit module switch , Call pression under pressure, Call , module calcule step task ,S2,S2,s3s4,sequence pression ,selector Call pin address ,transistor thyristor comande task , Call module matrices ,Display module.. operationel system call recall task ,multi task multi use, mmono task, call windows,, operating system call motor lecture current disc tape magnetic electromagnetic memory card , reader card call ,sub system - DHET... 5.Purpose: Completed time table implentation coverage Summative regularity, subject n1, n6, asservissemnt task assignment homework, marks allocation. 310x 6 , module , content module scaling. 100 marks , student program, asssessment tools marking memorandum , lsat.icass continued assessment , -Body quality insurance re certificate rating low, ..outcom scotiss qualifications value Assessment Portofilio l Engineering low ,teacher lecture judging evidence ,subject Quality Assurance, the completed solutions, recorded programs assign short ,re- assessment develop Engineering , analyse Probly, designing a straight problem, simulating or constructing , candidate class part question operationel skill reasoning skill total point achieve - candidate class /,part question ,//operationel skill/// reasoning skill total point achieve, Mandatory skill development course analyse staring , ,d.. Topics ,nated levej subject module.. - applyy math skill to manupulr low and working skill , cLccul , Applied Engineering electric skill analyse .. administration information. , description of charge, authority , Conducting the assessment: high judging evidence internally marked and verified , re - assesment unit assesment .. -Question / point of process or accuracy //expected responses - checks length correct conclusion/ evidence correct reason other draw..- - / evidence of appropriate add sub correct , Correct answer.. -eviden e module total examin ER composite ,overall strategy square .. - totalprocessand accuracy point for test total reasoning.... -isat integrity icass assessment subject . Conceptual question problem hydro electric generator concept assuming unit, conversion wath current , - integrated concept ligth trading concept cost heater , power Dhet...principle and practice purpose value work component engineering national ncv n engineering,scopet integrity engineering electrical level 4, and n6 saqa n diplomat examinaty. - Scope of...isat -Topic mark engineering trade anted and nave. Produce, operate component driller. - sub activities task ,time framework time allocation , 1 manufacture size weight scale power specific, / time. Total. - resource requirements . Tools assessment, material... . - topic operate and - challenge n diploma duet vs. saga diplomat vs. Vs. anted test council trade reasoning teach learners theory practice learning value assessment. 6.Circulum: value add assessment ,is or is not subject to changed, Saqa engineering...resoningvs counct vs NC's level electrical infrastructure dhet principal theory practical vs ,NC's matric teach learner assessment execise book technology electric vs, instituts engineering electrical,,, drawing Diplomat math engineering science drawing evaluation trade theory electrical engineering ,step dismental, step dimension works vs in AC machine theori instruction operational requirements algebraic, step qualifications rewinder vs council trade code ,trade minimum ,test resonement low ,test , occupation trade vs quality insurance Engineering , AC ,DC machine ,topic foundation, system ent level AC, vs NC's matric seignoy technical princy AC ,logic circuit math investigation quadratic exsry , input lecture output vs xircuy, trade scht vs code tender instruct,vs Engineering ,code trade minimum, knki manufacture batterycorrect , constructeur installaty circuits grade safety technologie ,nsaaa step work daily acti understaking material package mainty , assembly panel, labelling battery AC , DC, cabling soldering control competu compagy phase , - nated base Norton the venin network, resistance parole series start parallel start delta reseat ,advanced field ,dial Deer distributysystem substation vs basic sub station trade VCC,ICC advance physics chemistry engineering .. Memorise ,torrseafy advai field but work week basic field electrical under going research , - scope diplot vs advance field dhet machine transistay curixuy phase policy mathematic asic field d, - component job institutor low fundamental AC research AC research ,package low degree ,saqa n6,nqf7,78, degree technoy electrical outcom news , understand experience component didacy AC, DC,psychometric pedagic , - evaluation saqa memorise evaluation prep trade test vs. monorise vs memorendum test test circy literay,lecty learning ,Sawa meet reat lecture nated nated ,vs teach learner instity fundamental working compagny, Engineering : scope work project. Irregularite semesy policing Poe's award years self meet achieve textbook n submitted, 2000 award policy submitted papper for completed, previous papper discount. -completed textbook information after achieve DC machine Levi transit advance systeme completed , resposable ,exam holiday memo vs saqa vs is chat to win court , Engineering city power tender to Portofilio low rules , Portofilio city power experimental job,Shoprite experience but sales documy wallets account treasury .. - memorise nated instructywas to doing to rwiten ast no study buy opery theory , ciproc ,sars nated council business cooperation work nated lectt copyright and visit studi labour pliay permit to entry schot busit. Lose colrith process casebook ,sars calender busiys hool college in case with dhet deal .memorise markets textbook, memorise sale book sars commission property intellectual de register dhet high educare permit .policy exam national copyrith re mark book bibliogray reference number to mutch years .... - proficy colrith educare education system note book didacty lesson plan course inventories research methods model lesson plan , business markt busiey comments book note order project book, module week was not bring market scaling reproduction project learner 6.1. Assessment coverage DHET ,saqa council,, Subjects :project assessment.. and career mentoring research coverage faculties completed module, - project title : engineering national trade learner and lecture technical vocational department higher education examination national and qualification Framework national ,council trade and council engineering trade test question papper project modules explanation low rules exercise book, completed outcom project society. .education construction and project bridge keeping stability journal thesis stability civil engineering,and mechanical engineering and electrical infractute - psychopedagogie engineering civil outcom technologie ergonomic, , 1.Project construction and project management,investigate wat key national road conduct study feasibility assess viability upgrading existing route and the construction of new or by pass route , investigation found freight, municipality area . Light 1.project description: Extension from education n DHET Education to saqa council Education ways distance learning , infrastructure asset, a grade separated . Strategies construction elimination abnormal educare loop ramp load , bridge . Bridge Education,bridge substructure piled foundation abutumebt front Poste tensioned voided deck superstructure bulk ,design of layework make optimunmaterisj , - problem encounter and innovation, - piling tender temporaries ,archeological , Pile cap, temporary deviations by pass, stop along , empower target, - Project status: construct, chalkeny, inspection survey, safety educate. -case study testing implications , to conduct to detail design in order a cuss road mining , accommodation up grade, Client requirements, pavement, Layout of trial section x,y lateral restraint ,increase nearing capacity creasing length of shear tension verification geogridr static plate load testing falling weighting deflectimeter were used to verify the effect of geosynthetic , - present research: traditional geosynthetic reinforced weakness subgrade and Normally increase ,penotometer testing engineer later works, Project description: resultat from,pressure depth,project progress, strain material n/ mm , anchor tension force , equivenlent rigidr , flexible baseplate the propose construction programme duration. - cross section bridge structure, beam seat, concrete panel facing , reinforced,select backfill ,common , Extraction of durability subcontract yield stress, ultimate stress MPa ,bridge abutment .. Framework bmodern labour construction public work program leading to critiques of infractuture sector expand public b,construction maintain, Council nomination, project layout structure ,, , - project description: test site capture data km track Struct deflecty railway train whelk linear teanst steel , position track structure, resultat discussed. 3.dhet mentoring: Outcom career saqa maq ..education career mine geotechnical agreement Agricole sectorial engineering mining qualification authority mining and minerals sector . understaking electrical material mining qualification career mine workforce. Mining sector , why choose career in mining minerals sector, , Career mining choose a career how to make a career choice , Critical cross Feld skill required mining sector , problem identification and evaluation, problem mathematics literacy , planning career in the mining and mineral sector , wath career suite life choosing qualification, occupational categories technician trade workers ,machines operayorx mainstream career , understand qualifications, artisan career option mining minerals , career,, professional career ,laetber paths career ,financig your studies,,gold platinum metals ,diamond,coaj,cement line, jeweller ,extract petroleum and gases,service incident other .. Bridge catergor - keep bridge indentification number carer opportunities occupation framework occupation level n qf , occupation categories ,1,2,3 elementaire worker, machine operator,technicia trade , manager profrssy, production - - 7.1 Purpose dhet : ,, Education input out put Subject mining examination , safety health labour mining police. Outcom ,mining examinator national trade , explosion mine , discrimination mine . Trade AC ,DC, mine machinery. .7.2. purpose nated career : bridge static stability briage movement phase periode frequency stable way phase to phase job Engineering lecture transition phase - psychomotor job analt functionalite rate class hrv constructy woru saw building task tools must up date collective ,function real word student function machine student rule input output the class function rules teacher created spread , gradient a vector function gradient if scalar f (x,y (arrange partyah, stability construction isostaique diagram force structure hyperstaics beam ,regulation commissair,tools form stable trade nated engineering subject , assessment task build ,mark allocation ,content average , asservissemnt tools ,point balance framework structure stability.. - instability systeme development bridge statement periodic 3 month way key learner break time table semmester maintained up grade up date . . Teaching plan daily underplani g phase foubda phase intermediate seignor, staff lecture ,junior seignor principal lecturer Engineering traine circulum vocational subject . Time table general signal linearized x (t). Control didactic process machine key learner input out put loop variable subject x = ,y = y (s(x) discretion signal temp , instant ,energy power time continue R+ 1 , jx ,power ,, - transformer Fourier control didactic time table x t , r+ 2 dt , counter measure frequency content sum , property x(Q) + ,,property lineaire time table input output , real time table ,,derivation note time table dx = St , TF (St) ,, integra, impulsion diract time table uniform impulsion retenttion xt expent time table ,, complexity time table loop , - transformer Fourier TD ✓ (x,y) , ,filtre lineare box lineare circuit transfer input output (s) , x (t) .. - regime transitaire learner phase and teach system linear u (t) system education stable sponement stat equilibrium means system input out put loop Kirchoff constants transmittance , signal course modulation module week output modules course type trade phase -test readiness b.test scale maps distance learning corresponding learner concept distance learning graphic scaling size generating km learner distance , scale weigh learner grade real m square space scal factor point ,accuracy mesure survey , degrees latitu ,geodesie projection cartographic board coniaye,, isometric learner plan circulum ,latitude circulum implentation,perimeter circulum schema sequence circulum phase , transformation coordinator geographic circulum policy real engineering, longitudinal meridian ,exposant projection,constant projection p,coirdinat projection examination circuit dhet vs qctovs saqa scale .. - probably.. -movement phase vibration force oscillator learner, input out -Low rules of conservation of energy learner circulum policy, engineering move mechanical kinematic energybkEvwork done conservation force ,step determiner system Education , potential conservation input out put teacher , kE1+PEi= kEf+PEf ,step 4 , step phenomen bbeam energy breag,, Efficient learner ,useful energy or work output ,total energy input, transformer per phase energy phase learner,, Activity learner device home work scall effici, process kinetic calculate gravi learning linear mecanic, Frequency constant capacity static displaced,resonance frequency learner materit Curie ,Piezo electric voltage,, - robot dynamics kinematic control learning teach plant scare , position coordination lineare , circulum velocities Cartesian circulum move phase learn, rotation matrics activities passive rotation ,elementaire phase reprensatat, generality task space classic , body acceleration effectuator ,x y,z, angle ..language machine education funct ,from matric mild learner process ... - induction learner error resource machine educau..matrix time table line colonel movement weekend months build key ..form work job career .form saqa form dhet ,for qcto language matrices movt 2week ,3 month ,12. ,2 years qualifications experience language matrices deployment years compared , circulum implentation to the college and instituts form moved record exam internal external time typiste record archfile statement certificate,and diploma..fabric system. 8.1 DHET, vs seta merseta sasseta training Accreditation training, 8.2 Purpose: manufacture relate theory practical, components equipment, - trade ton max,chain load diameter. - trade ; code objectivity criteria. -electrical testing instruments, safety and faulted find ,system multimeter insulator leakage tester phase rotation tester. 1.correct test reading all safety rules ,armored , make standard armoured cable up 16 mm sq core volt glandess ferrules and lugs use to manufacture specifications ,join to mechanical CA2, indentification rating current voltbCA4 terminal PVC cable up to 1209 entry into cable end viz using mechanical compression methode correct according sabs 0142, - installation of machinery : install and level compressor motor a machine part on a fabricated base ,, All safety aspect adhered to ,no damages to equipment,level withug ,, Install commercial refrigeration system capacity 19kw refrigerator include pipe work according drawing specific ,single phase induction motor ,phase squirrels cage induction ,rotation correct ,correct ,,trade fault fault fa control find , control panel and motor control all safety aspect adhered sabs , correct test .. Vs . 1.2. Circulum extra subject electrical energy , industrial electrical ,electronic Engineering trade theory vs practical Module energy renewable. Electrotech. - thermoelectrical cooling , Peltier low relate manufacture. Cooling air conditioning modules, technical controller product , coefficient of performance,thermal design, DC current vs technical power supply type, - recommandation of the manufacturer , comparison of two technical controllers ,,linear vs amps ,,I/ max derive dt ,25 k ,0-0,33 , I/IMAX should middle , 0,33 -0,66 x IMAX ,, coefficient of performance (cop) ,, .. performance vs current, maximum temperature,warm ,cold ,is increased , thermal design,is crucial allowed , -thermal design , performance of system, reducing optimise hear sink fan ,power losses isolates area , Peltier elements,, Dissipation warm side ,Qg=QC+pel. - I= 30 IMAX .. -heat pumped vs current:,,I= 0,3 ,, I max ,AC)Qmax , ,,thermoelectric thermocontact cook eratiin DC vs pwrt , maintence , - recommand manufactt ,limity current ripple regulatit output , - ferrotec , 19 Perce, engineering controller DC curry case manufacture,,power compare.. - Comparasuon of two controller. , Stability to work. - design process: thermoelectric, estimate heat load interactive test parameter is amount of heat absorption, power dissipation radiation , conversion conductive, dynamic (dQ/St load transfer ,choose Peltier elements ,, -electrostaric ,electrodynamic, electromagnetic physic industrial electric engineering physics Heat rejected vs current control play heath thermal hear sink estimate aths ,, Performance vs current I/ max St heat pump,, heat pump vs current , Amax = Qc /0,25. Temperature sensor ,object high precision ,power supply requirements.datasheet control information input 9.1. Dhet vs ,seta merseta sasseta,vs saqa, 9.2. Purpose: all the safety and policy Defense civil and military safety outcom assessment. Manufacture relate theory practice , engineering learning - purpose STD 1285,, fuse holders ligthning arrester , electrostatic discy. Scop commercial and military electronic devices required no stated merseta seta no status to section mandatory , gov gazette etc EIC sabs correct. - application documents: sabs iec ,,general requirements sabs EIC mil norm , -D.3 functionalite marking :mil,sabs ,EIC sabs , - terminal identification: acquisition documents identify together functionalite line,load instrument , - other marking electrical diagram caution marking caution marking alignment marks, assembly instructions and other marking , - electrostatic protector confirm method where size limitations not accommodate all of the marking , requirements order of ,shall apply, -identifying number sabs sans ,EIC in mil safety code trade CO1, ,, mil -manufacture source code ,merseta mil ,name trademarks merseta sasseta seta. Mil STD , current rating when applicable ,date code when applicable , other rating and marking ,code method color coding telephone code , merseta colori,, -Dc breakdown voltage shall be xolor coded ,dot accordance method , except that color circuit breaker,line a,b,c load a,b,c marked ,,main terminal break shall be marked vertical, accomodation letter , precedes , polarity thermo static switch FSC 5939 mil rotary sequence is counter clockwise visibility , acquisition ,open frame construction switch marked construct color pressed moldings , punch identification, -toggle switches : toggle switch terminal marked in accordance, termination identification, identification push , contact arrangements symbol and terminal marking, single form normal open ,close ,,item specifical space contract number date serial code merseta ,, - used unit pack bag and ,procuring activities physical space is not available mark mil used, - designator for part assemblies : designation marking process to IEEE marked ,, sabs sans EIC mil Reprocurement: contract contract , used assignment. Details required. Electron tubes: type designation or number type marking sab, ,labej mounted merseta seta sabs visible ,mil - electrical electronics part printed wiring board marking mil STD 1285,, - name plate data ,sabs article mil data confirming applied .. sasseta merseta sabs correct - mil STD intended use ,issue of discuss,marking for shipping sabs, serial number sabs sabs merseta code mil ,air transportablr item , reprocurement sabs mil , subject term key listing ,name and caution plate, caution plate sabs merseta seta sasseta , mil STD , priority of identification information Assessment ,marking process,, -drawing engineering code gage code format size letter mil sabs number system , - design activity gage code drawing numb army tank automatics tank wareent number sabs ,size cage code scale ,unit , - pin number length contractor manufacture item not change original,defense logistics battle explanation ,record accurate number number duplicate , responsabily Engineering transferring design from design to another ,sabs sasseta seta add cage original identity , maintain design activity activities b, manufacture,pin item meet ,tabulation assembly installation ,source control delineat ,, - design synthesis : sabs merseta. , Mil 8.2 .Dhet ,vs sasseta seta accreditation, Assessment. -mil STD , safety security training, merseta required.gov gazette, Applicable ,: document , general engineering n studies electrical engineering.business studies, Government documents , specifications other government drawing engineering and Engineering science subject safe , order of priceden , definition commercial and government entities gage shelf , contains, design activity engineering electrical , documents ,, functionalite marking engineering electrical joint electronics type designation system engineering electrical subject n ,manufacture identification engineering n diploma , nati supply code for manufacture n engineering electrical trade merseta ,, nomenclature,order of procedt, part identifying number pin engineering, procedure instruction manufacture number ,set select drawing general requirements, government names join electronic type design system nomenclature ,army nomenclature binspection stamp ,special characters contractor entity gage identify marker equipment, except to table ,unique item small item ,limited multiple item , reference design government reprocurement, details required,type number and design,electron tube ,electronic printed wiring board name plate , marking battery circuit, marking labalk ,high voly notice , radioactive matery sabs merseta, ioning radiotion sabs , caution sabs , schematic wiring and cable sabs San IEC diagram , chassis identification, modification work numbers marksabs ,sensive electron device sabs IEC , sensive of marking ,general type number marking process ,wood sabs ,size labals sabs ,material radius corners mounting sabs ,spectral glass sabs IEC , opacity sabs EIC ,permanency durability sabs EIC , note usur did ,marking for , air transportable , . -2..introduction system management,process , required analyt , functionalite analyy, verification, system engineering process, system and control breaker review trade studies ,modelling and simulation metric risk management. Planning organising, system planing product and integrating system development, -3 system engineering. Electrical teade fundamental introduct , subject , application work experience, definition, facility ground system: - power distriy system sabs EIC to mil , communication system , bonding shielding and grounding relatship sabs ei. ..mil grounding safety practice sabs , ligthning discharge fault protection noise sabs sans , summary of requirements, resistance required sabs San,resistance to earth sabs sans department defense SANDF communication electronics requirements, typical resistive environment effect,neasyof soil resistivity,one electrode , subsystem ground burier gride sabs,resistance properties ,simple isolated vertical ,fLt potential,, ligthning protection, phenomenon ligthning influence ,strike holder structure less protection flash ,conductor impedance effect,inductor impeteaeth resistance ,basic fault protection fault protect .. Vs Saqa engineering electrical learning,advany maintence low voltage fault find , batteries,low voltage inspect service maintence battery charger , designing a lone renewal energy systems, design solar pump trouble shoot PLC,completed certificate competence , demonstrate understanding process communication system,control electrical network a control centre,spray wash energised high voltage network, fault find repaired DC power machine,operate on high voltage network ,select up generator for renewable energy ,fault find repaired electric system winder installaty ,construction Area 7, Electrical infrastructure level 3 area ,- -inspect record report condition medium voltat station appropriate,test maintain high voltage isolator ,earth system, transformer, equipment ,commissy terminate ,,install commission terminate medium voltage joint medium cable dcmachine,mainten voltage switch gear ,,fault find system conveyor install ,mining fault,construction disment,overhead,special area chemical , interpretation State, maintence busbar and chamber association equipment traction substation, 3 kV DC traction regeneration traction inspection record ,breaker .. --Vs ncv vocational isat frame activity construction electric . Learner Practical theory electric principal ,introduct .. dhet , diplomat engineering electrical,, electrotech, militaire over , defense award challenge Assessment meet defense,, Electrotech , select power of electrical appliances to achieve set temperature,carry calculation ,convert mechanical energy to electrical energy. , determined the amount energy installation in termine kwh ,, determine cost installation AC ,cost incud , apply vasic magnetic theory, determine magnetic flux density for magnetic, interaction between magnetic field, AC lines of magnetic force ,flux MMF, interactive between current carrying Maxwell,non magnetic relative MMF ,motor left ,theory faults of switching,, determine energy stored,calculate length, principle, ,,compare diffentperiodi. Time form RMS value a stage,value maxitprak additional, explain singlt and three phase system comparison, voltage number calcutlind phase , demonstrate calcul diagram the operationel circuit, explain apply purely ,,explain effect having poorfactoe capacitor, AC penaltiecable size equipmt size current demand,running of induction motor on full load synchronouse static delta star , description transformer determine efficient no load components ,transfotcore ,type AC air breather conservation buchils ,core lamination , emergency stop button warning caution ,,state installation procedt consider all safety precautions application non service generator set , consider all safety ground condition state ventilation noise define refueling access, in AC commission the sets preparation insulation plant proving test suplyis correct installed,all cable are secure and correctly connected,the sets correct out electric ,state earth , connection from non service generator set switch gear equipmt AC check load cable and interconnected,checj the earth operate non service,identify generator,applyloD in accordance with safe working check and adjust generator set running ,mainy voltage ,shut down generator, carry out after use check in accordance completed recomat, maintence non service generator set maintain principal procedure,apply all safety equipment,install non service distribution system,install distribution cables,install distribution units feeder pillar mcv,rcz ,install operate and test ligthning and power distribution system lapds, statement design,ensure correct placement fixumaterial task, ensure task is installed to line,ensure task requirements adherapply electrical standard,ensure compliance with and enforce all regulatoriiij, evaluation thee executive m e electrician task , implementation safe work ,, Selected appropriate switch gear ,determiner capacity switch gear install diagram,manufacture local distrtpoinr , manufacture data protection,shirt circuit, diversity, maxi demand,connected load ,selected type wire identify system ,determine adequate capacity basic , protect Dhet ,vs saqa labour mine , -Purpose:for plant engineering examination the theoretical section subject,theory practical, Electrical,mechanical,,safety and management ,accident prevention ,fire protection risk control , project management,project financial loss control , - electrical technology, DC current machine.motor generator ,efficient DC machine efficient of DC alternating single three phase circuit transfo, production of rotation magnetic, character synchronouse three phase inductmoyor ,semi conductor ,electric lamp and illumination,electric power transmission,short circuit condition ,circuit breaker ,cable insulator overhead, power economic of power supply,maximum demand ,fault discrimination systemeteical fault ,illumination exploinsion equipment,, - applied thermodynamics : air and gas compressor and blower,air motor refrigeration and property air condit,psycho entry ,steam generator ancillary ,heater balancing , balancing condensatir steam gas combustion heater transfer fuel transfer , simplestress, strain thin pressure vesell tension pression circular, close coiled shear force vending , temped ,strain second moment bendut shear foundation, fatigue mechanic,property,testing material twisting shaft property, reinforced Crete, conveyor wind plant ,elevator traction ,motion , displacement and acceleration,static dynamic ,belt and chain ,brake dynamic, toihead gear train lubrufian clutch cranes bearinghydrattransmissiin flow friction losses,material transmission pipe line ,Pelton wheel,flow in kaudnes, hydraulic machine ,mecanic measure air flow,dusting property, Commission safety maintenance condition. - planing and commission of project maintence schema fire detection system accident investigation, testing and repair electric motor phasing and synchronous AC motor operating tandem fault discrimination electrical,hydrastaic drivers classic sequence general, dust suppression,emission control flameproof,boiler inspection repair inspection vrsei unders pressure, maintence fault diagnosis compression refrigerator and air conditioning ventilation system steam pipes water traps ,steel rope inspection application type, 10.2 DHET, qcto scope, saqa sasseta. Outcome, -10.2.1PURPOSE: engineering science, module completed, algebraic linear basic foindamental system process fabric learner engineering science , theory theorem fundamental research,step task Learner lesson plan lecture plan mapping investigation analyse input out put subject module assessment f=ma+mg, v=u+at, p=wx.t, Fu= ft, heat = m.a .cxt , equation algebraic linearing exponent , Ax + by=o,,ax.ax b.b y=,, -fa.a +F.b.b , fa.a+FB.b=c.c(x+a) exp .n Subject Engineering electrical applied ---mathematics ,(1+x) exp n=1,--+ Engineering science g= ma + mg , v=u+at, p=w.t , Fu= f/t, heat = m a.x .c t2-t#, Engineering draw .. orthographic orthopedagogic educare education,care function. - industrial electronics, v= r.i , e= v+ r.i..theorem equation loop , Trade theory v= r.i, e= v+ r.i , // term 1,2,3,90 days, ///mark score point 100 mark,////inspect policy stolen excy//// recalculate error developm theory inventory motion low formula pedagogie fundamental engineering phenomenon low motion , Exchange policy investigation resolve framey regulatority engineering compliance crime vehicle ass license number low, step collationing crime information legal paray, crime source information identifying crime described crime analyse crime ,crime no protect over load identity module subject completed source and need ,design analyse feedback criminals trade theory safety . -engineering safety engineering completed design creation components safety management prevention low warning protection device incidey hazay acciy ,sab sans regulatory low motion F= ma+mg// Engineering labour ,inspect labour Education levy coid works relation collection misconduct fault award ruling compensation frame accidt ,F>ma+mg,,/// engineering policy framework regulatority implentation legislation informed. Claim assess indentify claim avai procedure case f= ma+mg,, complain f>ma+mg,, - test trade vs test dhet nated class question theory test , Test score mark subject, mathematics , engineering science, industrial elecy, electronical ,total value test engineering y/ evidence low given explanation low low rules limited Lim n (1+1/n) exp n ,, Lim -b +- b+4ac/# a..,,Dy/DX= 4x+3/2x+2.. into..., F=g.ma.mb/br#, p=rl stregy module elast ,fa= FB,/// vc ,vr,r#,r3,r3 Kirchoff northon , //// evidence Poe s resonning comparison test value test improper integral ,test converge diverge limited More ,less Rieman ,we not also define the integral as the limit as Delta x for to o of the genersj limit goes to infiny how does bound it self In (2+ x) in this case delta x still equals 5 / n but x I = an integi calculator give resuy,compare force low motion gravity attract,compare test two frequency,compare two load transmission value //// evidence low quotient evidence judgement entry low exhibition limited fract of low rule ,value add ,task requirements logic low value,operator task compare two value force operator mass gravitational limited sum,evidence low lineare limited factorisation,compare two task , , Engineering council. - visa trade qualificay answer passport, investigation planning system undergo, mathematics, requirements test trade module limited derivation function ,integray function master number rewui factorisation, equation word ,, -engineering science, engineering physics required test physic: module static kinematics mass force, gravitational heater power motion optique , strength material ,hydray -,electro required , AC machine components resistor semie conduct insulator ,diode rectifier half electronics , E,,trade test require ,basic advance filling , Total faculty regularity, and irregularilarity extra classes. .--1.2 Saqa labal supply Ras nominal 230 v AC sans , wiring is 732 code practice electrical wiring installay is residence ,guide for marking of insulated , - electrical machinery regulation learning objectives,sans portable tools , clause council , Framework, equipment ,metal work, sabs 767 earth leakage protect , wound transformer secondary unearth sabs 743 ,high frequency generator ,, switch marked clearly user to maintain in a serviceable conditions , chief inspector performance prescrib testing manufacture of electrical machinery, qualifications experience,earning 10.3. Purpose: dhet nationt trade n engineering electrical,, fundamental engineering level and License trade engineering electrical professional council .. engineering electrical science engineering, mechanical engineering engineering electrical , - compare low test methode two motion Hopkinson , indentify shunt machine or more system learner low evidence low , v = applied voltage output power Gl =1.V1 generator ,input power of motor M = (I2) , I1+I2, An ,n = efficient of machine output power,zm*= n (I2+I2).v= input power of G,out power of G = n x input , n,= √I1/I1+2, armature ,total loss generation, à losses irons for generation , n= (I1+I2)v- Pm/(I1+I2)V.., E1=V-Ia.Ra,,E1/E2=$.N2/$1, Serie motor two motor load ,,E a ,E b, . mechanical couple, motion angulair velocity transitaire permanent current power lineare two system , grouped generation pilote ,two transformation load or more system , resistance,, enclosed area learner Learner motion engineering trade - phasor diagram total system complex wave transmit generator, fundamental results , maximum amplitude equation ration , learner, - e1= Em.sin 2w.t, ,e2= k2.Em.sin 2.wt,,,e3=k3.Em.sin . 3 wt,, en =kn.Em.sin.wt,,,value wave algebraic sum fundamental and harmonic,,e=e2+e2+e3+....+en =Em (sinwt+k2.sin2wt+k3.sin3 et...k sin wt ,, diagram connected balanced load 4 wire ,load is vector,z 1=Z2=Z3=Z3= z ,, Ena=Enb=Enc,,ENA= EP<o degree, I 2=ENA/Z2= EP,, ENB=Ep-120,,0I2,I3,,, ,I 3,ENC/z,,,IN=I1+I2+I3=0,, ENA=E2,/√3,, z= 15+j..impedance ohm . inductance, -speed control calculation, E=V-Ia.Ra..N=V+Is.Ra/K.$ armature full load, , -electrical engineering advanced basic load system continue learning professional, : sinus quantity voltage in form ,,U= u.o2.cis(wt) and current I=Io2 cos (wt+j)., P=U.I= U.o2.cos(wt).Io2.cos(wt+j) =U.o2.Io2.cos(wt).(wt+j)., U.2.Io cos(wt).(wt)..(wt.j)(wt.j).),, P, sinusoidal wave,U1=U1.02.cos(wt+j1 , Layout fresnel , V1=Vo2 .cos.(wt)..v2= vo.cos (wt-2p/3),,v3 = Vo# cos (wt-4p/3),, derivation integration sinus wave phase shift instaneouse average P= p,1/T.iny TD.pd energy effective recovery work heater,power reactive apparent , Q= u.i.sinj,,car,,Q= o.s2-p3,vectorial, inductance, process give voltage node distribution,, I1=j2-j3, I1,I3,I2,,j #,j2,,,I2=j3-j2,,I3=j2+j2,, ok,,balance sinus 3 phase network ,P= P1+P2+P3,, P= v I1+v2.i2+v3.i3 Power factor active reactive apparent, P=u.i= p+jq P1.=v.i.(cosj+cos(2wt+j)).. P2=v.(cosj+cos(2wt+j-4p/3) P3=v.i(cosj+cos(2wt+j-8p/3) P==<p@+p2+p+3=+<,P=3.v.i cos j6.(s) Fresnel,,single phase practical load transfo area , synchronouse motor inte Maxwell Stoke magnetic volume toruf reluctance Kapp hypothesis manufacture motor ,e= NDT/St,, m= cmh . operationel balance,ms ,loss ,Lenz low, Low rules assessment is rules, 1/z = ,1/r= impedance resistance alternating ,1/g conductance,1/g,,1/l,1/c ,, sirmence conductor , low Assessment reaction magnetic load learning relation resistance system became impedance or impedance become reactance parallel load resonance systeme load charging, discharge , QC , system stability learning assessment, magnetic demanetismloe, rules engineering compare ,loop,,triangle delta Serie parallel, effect phenomenon P , practical work measure: , single phase transformer magnetic excitation field magny , vector denote H created moving electrical charge,Amper H= rot H,=<j Maxwell relation of Stokes integra countiur ,into A.dl= .into.iny rot A.ds,,into c HDL= into.int .d.s magnetic medium, vacuum herin,, B= u.oH,,uo=4.o.10 exp -7, Hm-@,,B=u.o excited,H=B/u°, dimension M and relation, reluctance magnetic, direction flux ..int c.H.dl=into.int.int j.dd=Ni=HL,,denote,€=N.I= into .CDL= into contour , magnetic ,,€=S+N.I = A., N.i=(I-e).B/u,, ferromagnetic to H=o permanent Curie,u+e=r.i , u =Ndj/dt from ,converter equation N@.I2+N3,in primary r@=o,u@=-e=N#.dj/dt, ,i2/I#, perfect tfo=P#=P2.A#,,U#=Z2.I#..complex ,energy balance active ,, power in out speed characteristics,e (I), u= nominal, I: ,,loss= r.i.i+r.ie,p2.j.u,,U=E+R tot , , - AC machine engineering creation of rotation fields a magnetic in space at angular rotation w at le blanc theorem a coil of ax by current ,I(t)=i.2.cos (w.t),, i.2.cos (w.t) create a magnetic excitation field ,m .H.H (t), m = complex from I(t).H. , velocity H.H. constant (t) angular velocity cos(w), Ferraris theorem create rotation winding , I1(I).1.2.3,,i2(t),H#,H3,H,3,,2 cos() 1.2 cos () 1t= Uwcos()1+,spaced regularly three could sinusoidal curen w balancing speed, speed synchronouse, bipolar,speed demonstrate Ms=60 rotate 300 rpm ,1 -operator power balance engine, P= r.i,,P= 3.u.i,, P=3.u.i.cos.j+u.i.u.s.u. ,.p=w.G,, P=wG+u I.P.3.U.U.cosj.u, iron loss mecanicak ,3 phase balance,, principle operationel, -F= into.iny .B.ds Lenz low, variation flux , E=j.f(w-w).e(ws-w).. Laplace force actions magnetic current ,DF=idlr.urB,electromotive force ,,e=DF/St,torque ,P= C.ms,,D's,,do=w.dw,, maximum power , dw.dp. -low Faraday speed conductor,EMF,E= B.l.v , low la place f.em = B.I.l,, v- ,,pem = fem x = Bxl.I.E/b.I=E.I electromechanic batteries load resisu in magnetic field,, -leroy design plate number ,sum asyny motor trade type Type 90.I3,834030 IPP, cos 0,82, AV 220 A,7,5,,,Ks 1,8 Rd 79 yv 380 A, r/ Min 1410 ,is class F ,Amb C degree 40, mark of motor ,type 90 LS, LS : letter of the series, 90 = heigh axe ,stand 56, to 100 Number of Serie : 834039, protection indices : IP 44, 4 protection body solide more 1 m, protection out delivery motor 1,8kw,power factor (0,82) reaction,V = 230 delta ,star current 7,5 efficient 79% level speed rotation vrm , S 2 service in S 1= 100%, S#, 60%, class insulator (A104 degree ,s = 80%, t max exploration 24 kg ,speed torque inerrie monimerric,,, -characteristics Puli g, fear reduce treil kR= 60, 0,85,,1450 Min , diameter of axe d=20mm effective treuul calcul pump MD.D/4 ..kg.m.m Pe=Q.g.h/1000.n..w,w=FxI,,F=M.g,,wur=M.g.g...w sex Put =wur/t,,loss mec,= c mec.nex,,CA.cc=JD/dt..E=B.l.v,,Fem=b.il,,,,- motor power apparently,,S=E.I.√3,,power active P=,,Q=√s.s-pp,,,,...XC=E.E/Q,,c=1/2π.fxc,,Ng=ns-n,,, -energie use / energy consup ,, efficient machine,w2/w1,,, efficy,= power use/ power consumption,,,,power motor = work/ Tim = force displacement/time,, -peak - to- peak, 2 peak, maximum=0,5 .peak to peak,average ,0,637,maxm ,1,57,,RMS effective=0,0707, maximum 1,414 , averaged,,. -citcuit RLC loop,source e1(t).. L.ddl/dt+Rdt/dt+1/c1=dv/dt.. -Engineering electrical : learning motoring DC command power circuit start connection command start with star deltat .. , Power fuse f,control transformation,contactor f over load km ,relay k, control button ,time ,motor optional accessories phase, fault relay,ammeter , start delta switch power circuit starting with start Delta switch note out put ,220,75 HP, 125 HP and protection, control transformer,K2,k2.k3, contactor , overload relay,control option accessories,phase operating on dual ,220/380v, 380/660, 440/760 connection y. Star connected reduced ,load restive torque, Circuit breakers,n = operation time load constant load max, maximum temperature,time,time at rest max , maximum attend load loss cycle duration,time starting access,loss cycle, starting of electric break ,time sequence, Duty.. Development system - advance power distribution system drawing note, Provide electrical interlock with S1 breaker km1,class if S1, is open ,S1 control class unit mkm1 is close key interlock a show,provide kmb, f1a key interlock generator breaker GB,provide priority load shed control for feeder breakers in us,f1A switch gears provide interlock,GB to able operationel,when no priority load , provide diagram breakers switch gear with dti trip unit including zone selective interlock and arc flash reduced maintence, provide remote touche screen maitaunancd tip unit communication part ehernel gate variable,end arch flash ,, - design fault value mms symmetrical,value,I= symetrical RMS current,IP= peak current,e=2,7,w=2pf,f= frequency,time,breaking rated maximum interrupted,150 kv,50!,500 mva rated , 18kA at 15kv maximum, interruptions of 23kA, 18kax 1.30) at @1.5kv(15kv divided, vacuum interrupted,metal clad , IEEE , -Check capabilities, 13,8kv x/R=15, 13,8 kV,, primary transfo, 3750, 4,16 secondary,,4,16,, selected breake System base z=3,75MVA/375MVA=0,01 Pu,,1%,,, R=z/√x.x/R.R+1=1/√15+1=0,066%,,,X=x/R(R)=15x0,066=99%,,tfo stand 55,% impedance +-7,5,, Transformer: full load. 31,000,no load,load losses, xR..x/RB, - phase fault i3 phase = E/x,base current IB=3,75MVA/√3.4.16=0,52,,, system x/R,, I1/x=0,52/0064,, x - line to ground i.o multiple fact short circuit duty is 8,6KA sym ,phase fault I@ ,,IIG=3(0,52)/0,055=9,9 - fault calculate check breaker application generator busbar system generated is 7,5MVA,4,16KV,, 1040A full load IB= 1.04kA sub transient, xd' =11, x=0,11, gene x/ R, 1/X's=1/x+1/x+1/x=3/x,,1/RS=1/R+1/R+1/R,,=3/R,,xsb,,I b ASE phased,,3(1,04)/0,11=28,4 symetrical,E/x Amper ,system x/E of 30 short circuit duty ,, - breaker type 50vcp,/ v max 4,76 kV at 29 kA max ki// 4,16kc per volt,,,, . purpose. wiring electrician ,wire way premise, -network protection line , fuse , commutation,induction, network ,filtre, cable terminate motor ,, Cable motor blonde for conductor heart join ,PVC wire copper ,insulator conductor PVC, colour ,control switch , . Current assignment conductor p2= uxix h,,p2=uxlxcos,,I= m light conductor,A= section m,,z= conductivity ,coper z,Au increase decrease voltage ,zx increase impedance load conductor section across area conductor , , Commutation ,command synoptic system panel design panel order component panel,, -program action ,switch interrupted,,logic circuit control diagram sequential,, algorithm,logigram control gate grafcett , algorithm initial start end , circuit principle ,power , -command electronics ac motor 3phase , rectifier, insulator 410 , ,,2000kw,4000v, 8poles,ECo=1800,loss heater, voltage supply rotor ,E=s.Rco=0,222×1800v=400v voltage out DC rectifier ,Ed= 2,35,,E=1,35×400=540v,current DC circuit intermediate ,I'd loss ..Pr/Es=22800/540=422A,,IRM= IR=0,816Od=0,816×422=344A, form facty angle, amplitude wave, En = 2,35Et.cos π, En=-540v,=1,35×480cos π,,,,π=146,4 degree ,,,line current 480 V rectangular amplitude, 422,RMs,,I=0,816,I'd=0,816×422=344,, --- current transformer water ,RMS,,I2=480v/4160×344A=40A,,.,, -Motor rotor 3000h ,4160,900r/m,60hz, pump connected voltage 4160v bogie open 1800v,transfo 3 phase connection insulator motor developed 800kw ,speed ,700r/Min ,, s=ns-n/ms=900-700/900=0,222, water ,110, Design diagram: Motor AC squirel power nominal of 25hp 1760/Min ,480v ,60hz, 18A cyclo convert ,200v,60hz,gate cycle ,VRM supply,Ea4=14,5HZ/60hzx480v=1160v,, efficient,= 14,5hz/60×1800 r/Min =435 r/Min,, voltage Crete order wave factor ,,max convert voltage , E a =1,35 E cos π, 54,5 degree.. - machine AC DC transformer open lab system game completed module workshop test practical didactic panel experimental Rotor board 60 mm/, 8 tr,coil 1,5 mm,2 pole ,20 ,total slot shoss,, test speed , power 100-240VAC, 50/60HZ, means vac / vdc0-65 v, IAC / iDC: 0-20A, speed ,0-400rpm ,40Hz ,0-600 rpm ,60hz ,rheostat rn4x250 ohnm ,80w condensatir 3×80 ,v rheostat ,simulator,, -molding construction D: 900×700×930 mm, stator - rotor molding, - expirementAl voltage out +15 VCC,1 a protection short circuit 12 VC,24 VC, generator sequence amplitude 5 v Freq ,1 Hz to 1khz , generator variable logic true false , 30 v, tracking,fixe double charged, current Audio signal, - MOSFETs control motor Serie universal command, Motor generator: principal 12 v,3000 rpm,1,2A, 3,2 cm charge sustract multiplexer,logic numerical ,4 and (2 input) and ,3 output ,12 and ,input,4 and (4 input) , 12 diode silicone, 8 resistance ,5icc, study ram random access memory flic flop , timer ,stockagr information pan el 4+4 buffer , 3 step scale registrar ,buffer ,8 bits , decoder of 4, to 10 line ,ram ,, 1024× 4 display hexadecimal analogic ,8 bit convertors,a 8 bit ,potent 10v source , bistable demultiplex ,4 flip ,compare ,4 cannot register, - calcul arithmetic ,16 logic arithmetic, 16 logic ,4 bib ,comptor ,decoder EPROM,8 send led level ,lineare discret amplifier relay ,cablagr structure cabling, test execution system mesure network wi Fi transmission 54 MBS,16 DM ,, Engineering therapeutic,multimeter ,3 and 4 ,voltage cc,400 MV,4 autorage, oscillator double ,automatic, , - energy balance 10 bar ,400 degree, super heat , generator 1500 kWh DW/dt,,o,5 conservation ∆u=Q,, m(u2-u1)+mg(z2-z1)+1/2.m(v2.v2-v1v1) kinetic , into dv ,pva entaphhy ,m(h2-h2)= Q, ∆ H+∆PE+∆kE=W, w = into P.dv,,w = PAV.. = 1×10 exp 5 n/m (264-1,69).= 95kj/s, force derivation force conservation Vector F= grad vect .EP , S= sum Q1, Energy balance thermodynamics, W= m(H2-H1), 1/3 mg(v2-v1/a,,= T 1=100 degree ,P1= 1 barb,V1 = 1,69m,,, Mechanical design process.. -calculation copper cm cubic concentrator sodium mol / DM cube ,,2c+ 4,I---Cu2I2+I2,,,I , Mineral composition ,mineral , formula,composition , LF .. 11. 2. Dhet vs saqa qct ,, Practical work experience lab workshop,workplace industrial compG y trade Purpose machine manufacturers. - Namenclature and nameplate information ,DC motor theory, disassembly and inspection,testing, armature, commutator,frames, ventilation and accesoir,motor assembly and final testing,on site troubleshooting,faillure analyse ,carbon,brushes c,current , density and performance, installation,startups d baseline information, operationel monitoring and maintancd motor and baseline installation data ,,how to read motor. Nameplate,motor storage , how to rewinding ,140step disassembly motor wipe off ,remove the motor take motor , tips namel nylon and polythane .magnet wire electric motor insulation papper, utility knife wire cutter ,flate blade screwddiy pliers,lint free cloth aorkglo e, , Motor rewinding process, remove winding , remove insulation papper clean housing,burn out tenant of insulator, prepare new winding ,insert new insulation papper burn out of insulation,prepare new winding on a spool,insert new insulation,papper house the housing ,solder and insulate winding end , tie solder varnish wind reassembly motor test, analyse 3 phase ,3000,rpm magnetic field ,motor board ,motor inscription board ,motor nominal volty, nominal,of rotation,R +* frame1,5 ,calculation parameter new winding Diameter internal ,external .mm cylinder slot, package dimension of iron core ,measure length stator package IP 87mm,external diameter stator packy Dv =755mm number of stator gaps z=24,step calculation parametnow measure dimenst of statorslot width of slot,b1=6,621mm,b2=8,5mm,heigy of stator slot,h=13,267mm,opening of stator slot Bo =2mm, height of slot neck a 1==0,641mm,toot width bz=3,984 Qu=π/B(b1.b1+b2.b2)+h/2(b1+b2) e=Qu=πb.b/4+Hb.. -calculation number of poles= 60.f/ns=60.×50/300=1..speed, (2810), -calculation poles step , T= π.S/2.p=3,14×75,5/2.1=118,53mm, pole step , -calculation poles surface, Qp= t.lp=11753.77=203211mm sa, calculate pole surface, heigh of lamel mm,type isolation ,papper lacaue, Calculation the tooth length Hz= Hu+a@=B,#67+0,6712=@3,908m,,Hz - tooth length, Hu heigy of stator , - calculAtion height yoke stator , hj=1/2!Dv-D-2.hz)=1/2(128-75,5-2,13,908)=12342mm,hg heigh of the yoke,Dy external Disney, Calculation the cross section of teeth of poles Qz = z.bz.iz/2.p=24.3981.80,04/2.#=38,237 cm Qz one tooth cross section,z number slot,bz width aualition of slot , Q4= π/8.(b1.b.#+b2)+h/2(b2+b2)=π/8(6,64) exp #+ (8,5)2+6,33/2(6,62+8,5)=93,4mm, - calculate number of slots per pole an pole,aaq= z/2.pm= 24/2.1.3=4, number of slot per pole ,z= number of slot, step in t = z / #.p=24/2.1=12, winding factor ,q 1 to 8, $ 2, $.. , Calculation of induction in teeth of stator ,Bz=Bzr , Qp/Az. Induction bzbzr induction in gao, calcul inductt yoke, bj ..Bzr.Ap/π .Qj =. 0,65.103.13/π.9.88=2,15T, induction stator yoke,bzr induction air gap, step calculation of magnetic flux pair poles ,d= Bzr .Q.p.10- exp 4/1.5 exp 7= o,oo427 e ,, Flux magnetic per pole Webber, - calcation of the numbers of turn phase W' = 0,22.uf.a./ d.f.e= 0,22.230./o,oo427.50.0,958=347,39, w calcul number turn , if phase voltage v , a number of parallels branch, flux magnetic,step calculation number of turn in site ,Su = 6.w/z = 6,247/27=62,75, 62 ,su calculation numby of turn fillings, -calculation of cross section of the wire , wv=Qu.fu/su=93,4×0,34/62=0,512 mm, wv cross secty of the wire Au= surface of slot, , dz=2.√wv/π..3.√0,512/3,14=0,807 1.Award degree diplomat:award degree diploma .1th,2th,3th,4th NQF national qualifications frame work NQF.,1,2,3,4,5,6,7,8 diplomat framework regulation documents bulletin subject Documents Portofolio meeting sa saqa I'd standard criteria Engineering electrical meeting in RDC leaving diploma bulletin, statement leaving .. instituts Saqa exam award documents police criteria meeting Documents, engineering n electrique Purpose documents 24month Working Release : Diploma certificate document submission high degree diploma Consentence .consent purpose award degree diplomat certificate qualifications transcript subject meeting required Requirements subject meeting . 2.Subject :no meeting diplomat national Diploma national: n1,n2,n3,n4,n5,n6 Level 4, subject minum nated exam and trade test panel wiring Documents Portofilio process nated Isat process council Nated exam : ,Statement resultat Irregularilarity process final award degree diplomat . School meeting qualifications process continues. No meeting .. Meeting school leavers 3. Outcomes national : Requirements: task theory step input equation operation basic advance operationel mathematics system integration differential derivation fundamental low step system analyse system process fabrics investigate process device, ∆x. DX/du=x exp (e expx+e/x)exp x 2, operationel equation input out system linear process force limited different fabric force , v.ra. 3 system equation input ration factories process force different Va vab Task step system fundamental lineaire input force different x .v1=v2×t2/t1..DX/Dy Subject. N.1,n6,. assessment task,mark allocation 310, content module. ,student week completed submit asssign, tools asssessor 100 Engineering practice 240 ,24 month cabling join fridge armature ,busbar safety db , building On Thu, 09 Feb 2023, 10:44 TSHINGOMBEKB TSHITADI, wrote: 1.National qualification frame work .nqf6 . engineering n electrique and teacher NQF 7, education technology Subject 1.2 .Purpose :statement resultat: Assessment : Credit 120 ,field ,originator sgb, Framework: Criterion minum require scop maximum Tools asssessment: Entry award degree diploma originator ispt Kinshasa exeta it kitomesa inpp dr Congo math info unikin. No meeting / St peace college n engineering saqa , .. pursope engineering nqf evaluation 1.3.Tools assessment. Award diploma n Assessment entry exhibition Statement Policy saqa 2.1.National diploma nated trade Credit 0,5 certificate Statement entry n 1award degree diploma saqa framework Module Policy department n diplomat engineering n 1,2,3,4,5,6 certificate Module topic Portofolio Statement Implementation exam learner Module n engineering subject : Module 1,2,3,4,5,6,7,8, submitted textbook .submitted exam papper exercise assignment assessment Lecons topics Scal marks analyse Lecture output resulta assessment St peace college: textbook note on line Completed week Examinator national papper , Statement resultat outcom nated Panel wiring 3..Careers education department research scientist bono work. 0utcome Discovery Council trade career / council engineering -Institution fundamental theory practical graduat institute foreign career and college basically advance research Trade test Evidence low: difference reasoning test motion ,low required equation basic fundamentals operational plant mathematics integration differential derivation fund's . Low task analysis system equation input output linear process force limited different integration, system fundamental experience.powersysyem electric shop precautions workshops electrical shop absolute, asssessor rubrics, 3.fault find and protected device device control sequence second low I stallation , components installer PVC ,conduct,metal conduit flexible low ,DEP low installation of equipment right tool ox clear safe verification installation, 4, investigation engineering electrical of the low task subject module , 5, investigation fact in issue relevance admnise, Investigation the function weighting of evidence function judge control of the jury market subject,, 6: analyse investigation design system requirements information required force engineering electrical subject module task operationel plant mathematics integration differential fundamental, Lineare. 7. Investigation principle criminal low and substantive due process rules admiss and relevance basic engineering electrical. 8.investigation evidence: collection are recovering crime processing method scene documents organisation processing crime final result sketch. 9.admbistration communication skills assessment stress skill engineering, Information manage system , Framework regulatority legislation mandatory engineering power arrested civil implementation, delivery report anual engineering electrical I, 10. Training security skill development registered assessor admnise progr engineering safety keeping documents inspection and power inspecteur offence and penalite.. Up electrique the assignment . Criteria questions,poor behaviour,suffice,advance, excellent Low integration police security framework 11.verification sasseta. Durie development low power systems shop tools precautions workshops low rated investigation tpm engineering maintenance fire arm integration in crime scenario police framework regulatority legislation OSHA.. occupation health low find fault and protection device control circuit sequence second low sans installation components fault spark insulator cable low electrotech installation of equipment right tools clear,low motion investigation challenge admnise Fail corporate equation Criminal low substation die process rules admnitrade low informer situation account process determine profitable methods scenario organisation processing sketches,,.. Low supply safety power regulatority.. 13..low council engineering and council trade occupation safety step task creation case study. Low visa permit work council practice verification EIC CEi power systems electrique linear circuit lab DC power supply function work low stand size.motion low agreement, 14, trade association amendment trade operationel system integration foundamental step.input Trae basic advance.. X work operationel factor empires product e exp x logarithmic activities x inconu add divided work exponential x inconu factor linear entry exhibition motion equation trade translate,electronic , Operationel engineering, Test trade council engineering career. 15low examinator skill time table work permit admnitrade time ,time table week time allocation subject , assessment, assignment council trade mark allocation,permit content average 8working 6level 24subject,x work operationel x exp n products e logarithmic actually x work factory lineare derivative integration test low lineare x operatoire AC DC ciy assignment mark weeek ,week DX/Dy working labour allocation work step xEx logic n possibly competency rating evaluation licence Permit permit mark allocayweek.sabs statem. In, vab(va-vb) Motion low service In logarithmic voltage Va -vb operationel compare suply resistor R2,decide by sum resistor Serie R1+R2 plus voltage total step compare difference ial gradients DX DT linear impedance operationel compare logarithmic expontiak, resistance production z impedance over r step parallel operationel permit trade design gn control switch ways to reduce voltage and decreasevoltagrn,,,trade generation equation load cabling equation lineare transmission linear load lineare Tshingombe tshitadi fiston Portofolio evidence low , Case study Cover letter : Tshingombe Tshitadi engineering electrical To st peace college and city power 23 April, 2023 tshingombefiston@gmail.com 0725298946 yeoville, rsa Dear Sir/Madam, administrator training and resource humane Sincerely, for my requested career outcome in academical 2 years training and examination theory and practical for subject curriculum assessment need t more practice in your company ,Courses engineering electrical Work Experience Title/Position city power training /st peace college training 02/2023 - Present , rsa engineering electrical visited work place training experimental Achievements/Tasks award degree diploma saqa/ award panel wiring electrical that my requested for completed experience in your departement and compagny solicite that job for visited site experimental technology and science engineering experimental thank u for your complement and gratituid Tshingombe Tshitadi , RESUME AND CVS Tshingombe Tshitadi engineering electrical engineering electrical implementation time table to job time company experimental trade tshingombefiston@gmail.com Phone Number Education Study Program st peace college 10/2020 - Present , jhb r Courses engineering electrical Work Experience Title/Position city power training /st peace college training 02/2023 - Present , rsa engineering electrical visited work place training experimental Achievements/Tasks award degree diploma saqa/ award panel wiring electrical Contact : 0725298946 - tshingombekb@gmail.com Skills panel wiring electrical Personal Projects engineering electrical visit st peace college/city power (04/2023 - Present) award certificate diploma / saqa n engineering Organizations st peace college / city power (04/2023 - Present) engineering electrical training trade engineering , Certificates engineering electrical/ studies statement (12/2022 - Present) engineering subject n,1n,2n,3,n4,n5,n6 / saqa n diplomat studies final assessment and examination / Languages Assessment practical topic st peace college portofolio evidence low coverage . icass internal and external assessment : relate low circulum more to practical , Project week and allocation time table research : saqa suplementaire subject : Research and project circular assessment visited city power, Student St Peace college company education Career outcome Portfolio evidence low practice assessment engineer electrical, ca Student name tshingombe: Content 1. Scope: research implementation framework study trade theory practice engineering study time table assessment allocation implementation framework regulatory in government. City power and Eskom training center development infrastructure support training train training experimental student case study. Time table allocation research integrity subject outcome more. Department education dhet DBE and council trade assessment integrate 1.2.Abstract: knowledge student case study engineering design analysis investigation field: tendered time table trade ask factor in company overview in city power ,research experimental trade theory research training knowledge city power municipality: job Gauteng city approved I in power electrique metering house home basic, Join venture government development Eskom commission entrepreneurs. Labor health inspector electrique compliance merest manufacture. Saps electrique engineering supply.sandf mil development system defense environment STD physical company security close tendered required safety security electrique factor 1.3 purpose: overview in developing company tendered city power supply: Engineering electrical case study 1.4. Requirements, Engineering electrical training time table integrity subject outcome theory license trade .license practice trade .anted test ride panel warming and learning level electrique principal license. Development subject written assessment circular time table self assessment peer assessment class work written projection case study anted module week student 1.5. Task. Ask answers: theory practice visited plant operations experimental assessor in workplace labor. Questions asked analyze overview on subject working in developing training company, answers responsibility sector appropriate sole Consol working Attendance was the factory trade theory regularity and irregularity in sector find material design in classes and sector find means industrial company relate manufacture majority and minority in power plant that means to Create a system to support the training. And support to attendance learner in power city more job opportunities. 1.6. Task Ask questions power to integrate sector training was satisfactory in CVS to gate information for training Power city metering customer need to trade customer technology outcome technology module trade theory education technology trade theory power education circular customer instruction metering customer service energy sale buyer energies electrique 1.7. Step. Need to cost customer power factor theory company customer supply need tax value trade theory consumer supply appliance electrique metering cost maximum demand trade theory rate : Technology invoice customer service energy to make system projection engineering trade theory implementation in demand factor in power city trade supply customer power factor to working training. Question answers overview. Cost home house city appliance electrique rate . Geyser metering training tree phase, single phase metering asking to be implemented time table allocation trade theory 1.8 Operational support rendered Government labor. Government industrial. To compliance Labor: electrique power factor test inspection compliance. Time table allocation Relation education labor technology Test installation Electrique metering single phase .three-phase test trade certificate coca. Checking inspection safety health Machinery occupation health test Design inspection . Description Unit yes or not Tender: supplies saps development load company manufacture in city power Saps student Time: information management system, performance system development Tom engineering St peace college Afric instituts police Practice work Reg : C0700401099 Sars vat :9237228238 Sasseta number: accreditation:111999691949 CHIETA : national certificate in electrical engineering level2,3,4.. Electrical infrastructure and building skills,electrical and building skills, electricak and control panel wiring, Merseta:17-QA/ACC/1311/17.mexhatronics level 3,3,air conditioning refrigerator vantilatiin fitter welding control instrument HVAC, hydraulic,, Nated n2,6,, mict ACC/2014/07/3188.. Computer NQF level, info technology systems,computer I'd exam Saqa n diplomat;I'd 201911130002 Learner faculty CHIETA.sutudent certificate number:COM182609001. ID:2100002023812. I'd:2004007064381. Admission permit and examination time table.engineering study.50110002.. External exam: I'd number instituts college RegNo:2013/034490/07 Dhet no:2019/FE07/028 Dhet exam No:DDP1220/19/00130 Merseta No:17-QA/ACc/1250/16 External exam: Afric trading Sasseta creeditation 112999691946.. Registration dhet:2019/FE07/014 Merseta 17QR/ACC/1312/17. LP R/09/2017/07/0018. EW seta 2093-280525. LGRS-2093-200525. Exam.899992880... Subject. Full.. 47.1.Requireded: operationel subject field saqa . seta implementation Saqa award certificate. Assessment conduct seta Saqa award diploma certificate n engineering.and St peace college training skill.mseta CHIETA.. development panel and control wiring Level engineering electrical.infracture development. Meeting saqa requireded I'd..no meeting statement skill development.id certificate award St peace college .db box outlet socket switch dol motor.transformer. Control instrument mechatronics, Career development city power graduat.implentation .career Continue trade skill supplementary trade meeting month trade . foreman ID: 258968 saqa commissioning domestic or commercial . ID: 10259 saqa fault find repair and maintenance tree phase , electrical engineering. ID : 263006 saqa ,demonstrating wiring of premise defining ID : 258937 ,install ,maintain low voltage,DB protection ID116466: inspection and circuit , ID: inspection and maintenance control and control panel and circuit , ID111388 :saqa electrical engineering and construction saqa I'd 67461: N3 code instruction category meeting ,A,B,C,.. Level2,3 ID : 258937..plant generation , distribution, construction mining chemical and energy sector, maintenant,DB, protection,electrical safety cleaning, --scope of work specifications.sans 10142, - circuit breaker ,isolator, contractor and relay ,install Db , inspection Db , ID10607, 10605,10634, - replace fault -ID 116434: control electric network from a control electrical . Centre sgb ,power plant .field manufacture engineering and manufacture. -Switch way panel wiring education technology. I'd ,electromechanic .electrotechnique .. teacher I'd .saqa . -47.2.requirement n diplomat engineering. ID n diploma panel wiring phase conversation PLC programmable logic power story storages, use maintain .graphic diagram design, St peace college outcome career generation power station and saqa award degree diplomat continue supplementary assessment student subject choose trascrip record no meeting engineering electrical diplomat dhet . Log activities company city power implementation visited day field manufacture technologies trade. Training - Interpretation drawing electric code graphic. Purpose. Assessment: explanatory electrical plan create electrical plant, Content, with is purpose benefit of electrical, metering city power and St Peace college workshop - How to draft an electrical. - Tip for making electrical plan, interconnection of different component and fixture to the system .in training cooperation. Visited - power line with details such as size voltage, rating, power transformer and winding, the main switch breaker and fused switch, - draft ,step layout scale drawing room ,cabinet ,step 2,plan it advance your electrical plan, step walk your pal building., tips for making electrical furniture light switches and electrical outlet, - Plan for additional outlets renovation, Amount table Lampe, yea, later, appliance wiring plan, -electrical plan legend Calling mounted light, duplex receptacle, telephone outlet switch. - Basic electrical plans, - Patients room electrical plan create your electric plan firm a patient, Basement wiring plan --when listings out item such a feeder breakers and wire size, for particular project piece of distribution equipment, Intern of electrical distribution, -schedules are often included switch board and panel board, drawing to list number of circuit breaker load feeder ,size and number of wire , Project Schedule usually expressed in tabuled, organised self explanation. -typical ref, legend and - build drawing s: Construction project is completed is revised drawing, created and submitted, constructor, high, any charge Initial design drawings. -Construction process completed. . -Electrical drawing and schematic. -designing installing troubleshooting electrical system requirements use various, line represented. - design engineering and technician use schematics to build and troubleshooting -One line diagram: medium voltage switchgear one line diagramed, and power systems single diagram. Is often drawing flow of electric. Typical: major components in the power systems list system voltage, transformation impedance, interrupting rating and fault current just the basic .item -Drawing should be kept. - Main control room of a -switching operation by identifying feeders and the load they serve, - System voltage frequency phase and normal operating position line diagram, - For more detailed view of an electrical distribution system, three line diagrams is used phase polyphone a c, system drawings, connection. - Diagramed show distribution component such bus rise, bus plug, panel, board, transformer, small, branch circuit, drawing alarm, system, -schematic diagram Purpose: man schematic diagram emphasis circuit elements function relate components, series or parallel Found, inductor, diode, logic gate, fuses contact, switch, every circuit, -circuit breaker control schematic: Wiring diagram. Terminal for selection terminal, relay, load detector relay wiring diagram. -main purpose of a wiring diagram electrical circuit arrange, schematic diagram, - wiring diagram ,part , device terminal strip, appropriate number,letter,colore design,terminal and connection between the components are clearly,build repair , -Block diagram: reference input filter sum, controller actuator process plant, distribution, sensor, - arguably ,basic type of electrical drawings block, diagram, components of complex systems,form of block,internnected,block provide a conceptual, idée a process is completed, electrical, Symbol. Represent schema -logic Diagram: current gate and logic gate clock - Breaker failure relay logic diagram. Modern protective relays utilization diagram to represent complex circuit process .electrical. - Schedules. A build Electronics use soldering. And disordering. System...welding iron, solder, silver, or copper lead, desoldering, plug, outlet, cleaning disconnectorb, connector.printer circuit fabric film microship process. Silicon. Plastic molding... Fit recess .fit wiring .process... Control - Instrument method selector design metering process I Appointment of service provider supply St peace College and city power delivery component lab workshop part time table subject... -introduction global stage St Peace college. - Scopes of project: projection required supplies to purchase and deliver total, -Special condition component Subject module metering 4. Purpise documents. Budgets: a projection budgets St Peace college city power time table fee.burasary.close graduation interne ship fund student.gov -Quotation value tax (vat) project: _time frame project is to commence success bidder Firm price subject, name of the company quotation close Appliance and company subject. - Item description of good part number quantity Evaluation criterion (80/20). -request for quotation number -limitation to quote supply and delivery Item/ description of good //quart///price/// bid price RSA 001 /engineering electrical practice workshop projectile engineering open view lab test lab and workshop practical saga .duet training exam paper .seta. Assessment police //// amount estimation fee Total include .8modul x 24subject x3month 200 projection years amen's test experimental technology. Training integrity one project... -delivery period Specifications required for project: Registration saga assessor conduct certificate. Saga I'd institutes foreign. No meeting institutes accreditation saga decision. Admit /30-39 NC's. Total credit. -assessment policy IE099-IE00.regular internal, Saga decision 10105/14 advance diploma intermediary phase teacher. Conduct... .n1-n3 national certificate engineering studies. -N1: Saga ID6710, N2 saga ID 637375, N2 saga ID 67491...Entrance... I'd saga award diploma N ... Ncv assessment plan isat . 40.7.1.Subject.. assessment task test assignment internal external assignment .assessment tool. Marking memo rebruc ,,.. topics subject outcom. Topic 1,2,. ,time and marks allocation 1h marks...examination training training formal. ...training exam rwiten permit and time table practice exam days. Fundamental subject ..icass .time frame, asservissemnt activities, scope assessment term 3, suggestions allocation .analyse grode.. Isat integrity practice..time frame .allocation require .. 41.1..required city power vacancies Estimated ICT service Research inovation: -table of content . Graduate internship Training center employee.visitor student apprentiship visited education technology high school and trade development school skill training .trade education career outcom exhibition engineering education training. 1.city power vacance 2023.for officer special and variations use career opportunities. Training oppoy . Metering guyser. Light city .training engineering career. 1.1 How to apply for city power vacancies 2023... Student career granted. -meter reading submission: St peace college time table engineering electrical Portfolio evidence low consumer panel wiring customer and plant experience design cost power factor demand reader implementation in city power loop .. Interlock system. Training partnership test. Outcomes career student generation power station transmission trading. - City power workplace ready to light up career artisan engineering. - Name of profile - City power. -manager vacancy. -city power officer vacancy. -city power specialist... : 40.10...requirement: implementation --SAQA module award diplomat -Award diploma n.engineering electrical -Award instituts foreign decission saqa -registration .award saqa n1,2,3,4,5,6. -Award meet documents. - Assement assessor saqa conduct moderator I'd: 202001305040/20191130002 Dhet exam nated: 201000203812/2004007064381/2011007434332.. 40.10.1 requireded of work experience logbook instructions programme code 5090840..national n diplomat.engineering studies electrical I'd :90674.engineering studies NQF level6, 360, credit saqa learner I'd 67043 national electrical engineering nqf .level6..learner name :tshingombe Tshitadi ,surname : Tshitadi Fiston. Number employeer : Details compagny St peace college city power: Name signature... Check up To compliance Labor: electrique power factor test inspection compliance. Time table allocation Relation education labor technology Test installation Electrique metering single phase .three-phase test trade certificate coca. Checking inspection safety health Machinery occupation health test Design inspection Tender: supplies saps development load company manufacture in city power Saps student Time: information management system, performance system development Tom engineering 2.1.4 operational preliminary case study visited power city Operational required: Permit working tendered temporaries permit and license study council permit government homes affairs study permit foreign citizens plants permit, and RSA permit I'd and exam Exam permit period passport visa tourism transport logistics student Meeting 2.1.4.1. 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Questions factory ask/anew student was not allowed to trade in the plant and to be training in the plant for dangerous .labor insurance compensation and development social student have for more information was poor in the sector theory to gate more information and to overcome power city member employment to work exam practice together in national planning plant was no coming successful for students to allowed. student must drop CV in entrepreneurs and city power to be employ for training and gate information not for work outside but in the plant system no to work in time table allocation technology outcome student to work powerful in academic workshop Student to research and work power city information metering geyser in the academic research time table academic time table electrical .and student Can gate qualifications. Security reception more policy power city framework did allowed customer services to delivery more information only training center power city was allowed training. 2.1.4.3. Ask / answers. Factor permit Pass port time table careers. Factor physical security Eskom close tendered required company security must be completed student security sassed accreditation school. And student seta number request for allowing Student engineering assessment council engineering and trade council visa I'd permit student for trade exam. Was Questions more with visa internal city power Eskom Day visit rendered was not defined to student to working in government city power Eskom, search research system integration student circular assessment to work and find minimum granted for examination labor. 2.1.4.4 .CVS student city power and training trainer to delivery bill information system. Integrate job government student was alone by self explanatory no company tendered work partners with city power Eskom on visiting site student was not in site was dangerous place for health student working in higher voltage and irregularity students in the system . System need to trainer training appropriate job and faculty appropriate school power city in school development plant power city metering student in meeting plant, school collie Eskom commission. Department trade industries Industries Company in trade company examination engineering, engineering labor school in engineering Electrique in commission class school generate 1.4.6 .student college assessment workshop workplace class work. Homework research engineering project process in field faculty research department research. Ask/ 2.1.4.6.1 Faculty allowed system engineering lab engineering.lab workshop engineering studies and library academic studies center assessment engineering. Permit engineering allowed engineering time table work engineering 4subject statement engineering case studies for projection cost trademarks was outcome technology. Misconceptions faculty retention subject psychometric vocational career guidelines study engineering projects trade plant engineering

analyze design investigation system .generation electrical magnetism generation transmission system anted CCTV , study material, building student experimental plant city power how plant was working Tendered close time table n1, 2, 3,4,5,6 NQF /level subject in system continue basic advanced filing engineering fundamental system . Circular system study must undergoing investigation principle low power. .consumer power factor trade correction power module student more and company operational required Gov manufacture relate sassed seta merest accreditation company trade to supply trade test making trading component equipment to sharp fit to step operate chisel mark . Engineering trade in the plants Design system 2.1.4.6.2..government system national fund financial implications in system exam to more go sector . .go development social worker union fund to student go visited. Closed sector required minimum score Inventory 12..4.6.3. Metering module trade theory electrique. Electrotech.electrotechnology resembles instrument measures. Information management system. Framework communication skill, mathematique engineering science outcome engineering electric .factor Instrument ammpermeter voltmeter wattmeter cos.analogy.digital metering. Transco metering low voltage .high voltage. City power Eskom authentic district municipality job customer house building substation. Generation transmission. Transformation cabling sector basic home electric metering power geyser cost Month consumer kWh indicator meter and coat price inventory Customer registration number existing installation and customer metering number custom power meter square consumer planning wiring design custom: Registered customer training sale air time and metering installation single phase and tree phase installation industrial installation. Customer Municipality lighting road ways street municipality designing civil engineering power lighting switch ways system. Trade light to implement bulb trading data system. 2.1.4.6.5. Metering implementation time table experimental generation transmission level and panel skill experimental in the system house home development to the plant training city power Eskom. Practice electrique engineering research academic switch ways design db box outlets socket award qualifications time table investigation switch ways circuit breaker motor investigation analyze design power factor to be re implantation in company city power Eskom commission entrepreneurs go implement to be working in system. Policy system academic sibs sans trade theory licensed System information analysis engineering fundamental system process... Communication system engineering electrical license term trade to be implemented in city power was installed 3.1.4 operational preliminary case study visited power city Operational required: Permit working tendered temporaries permit and license study council permit government homes affairs study permit foreign citizens plants permit, and RSA permit I'd and exam Exam permit period passport visa tourism transport logistics student Meeting 3.1.4.1. Permit allowed minimum job career student permit security in BTs training allocation minim job Social work classification job government to allowed case study student trade exam to be experimental in the plant city power Eskom and government institutes labor department Visa code trade booking exam I'd time table days and time 4subject Permit legislation framework regulatory mandatory to more experience pass port visa student I'd asylum to to work and studies tourism in the plant 3.1.4.2. Questions factory ask/anew student was not allowed to trade in the plant and to be training in the plant for dangerous .labor insurance compensation and development social student have for more information was poor in the sector theory to gate more information and to overcome power city member employment to work exam practice together in national planning plant was no coming successful for students to allowed. student must drop CV in entrepreneurs and city power to be employ for training and gate information not for work outside but in the plant system no to work in time table allocation technology outcome student to work powerful in academic workshop Student to research and work power city information metering geyser in the academic research time table academic time table electrical .and student Can gate qualifications. Security reception more policy power city framework did allowed customer services to delivery more information only training center power city was allowed training. 3.1.4.3. Ask / answers. Factor permit Pass port time table careers. Factor physical security Eskom close tendered required company security must be completed student security sassed accreditation school. And student seta number request for allowing Student engineering assessment council engineering and trade council visa I'd permit student for trade exam. Was Questions more with visa internal city power Eskom Day visit rendered was not defined to student to working in government city power Eskom, search research system integration student circular assessment to work and find minimum granted for examination labor. 3.1.4.4 .CVS student city power and training trainer to delivery bill information system. Integrate job government student was alone by self explanatory no company tendered work partners with city power Eskom on visiting site student was not in site was dangerous place for health student working in higher voltage and irregularity students in the system . System need to trainer training appropriate job and faculty appropriate school power city in school development plant power city metering student in meeting plant, school collie Eskom commission. Department trade industries company in trade company examination engineering, engineering labor school in engineering Electrique in commission class school generate 3.1.4.6 .student college assessment workshop workplace class work. Homework research engineering project process in field faculty research department research. Ask/ 1.4.6.1 Faculty allowed system engineering lab engineering.lab workshop engineering studies and library academic studies center assessment engineering. Permit engineering allowed engineering time table work engineering 4subject statement engineering case studies for projection cost trademarks was outcome technology. Misconceptions faculty retention subject psychometric vocational career guidelines study engineering projects trade plant engineering analyze design investigation system .generation electrical magnetism generation transmission system anted CCTV , study material, building student experimental plant city power how plant was working Tendered close time table n1, 2, 3,4,5,6 NQF /level subject in system continue basic advanced filing engineering fundamental system . Circular system study must undergoing investigation principle low power. .consumer power factor trade correction power module student more and company operational required Gov manufacture relate sassed seta merest accreditation company trade to supply trade test making trading component equipment to sharp fit to step operate chisel mark . Engineering trade in the plants Design system 3.1.4.6.2..government system national fund financial implications in system exam to more go sector . .go development social worker union fund to student go visited. Closed sector required minimum score Inventory 3.1.4.6.3. Metering module trade theory electrique. Electrotech.electrotechnology resembles instrument measures. Information management system. Framework communication skill, mathematique engineering science outcome engineering electric .factor Instrument ammpermeter voltmeter wattmeter cos.analogy.digital metering. Transco metering low voltage .high voltage. City power Eskom authentic district municipality job customer house building substation. Generation transmission. Transformation cabling sector basic home electric metering power geyser cost Month consumer kWh indicator meter and coat price inventory Customer registration number existing installation and customer metering number custom power meter square consumer planning wiring design custom: Registered customer training sale air time and metering installation single phase and tree phase installation industrial installation. Customer Municipality lighting road ways street municipality designing civil engineering power lighting switch ways system. Trade light to implement bulb trading data system. 3.1.4.6.5. Metering implementation time table experimental generation transmission level and panel skill experimental in the system house home development to the plant training city power Eskom. Practice electrique engineering research academic switch ways design db box outlets socket award qualifications time table investigation switch ways circuit breaker motor investigation analyze design power factor to be re implantation in company city power Eskom commission entrepreneurs go implement to be working in system. Policy system academic sibs sans trade theory licensed System information analysis engineering fundamental system process... Communication system engineering electrical license term trade to be implemented in city power was installed. Engineering electrical evidence collection guidelines recommend police and army police military... digital electronics item may have.compuyer .mobile devise laptop.record ammunition.place cushioning material comparison analysis prevent damage record manufacture serial number model found fire arm weapon . Examination item information. Personal contact.modeor disconnected from network Faraday bag main tenant power to devices d consultant digital forensics examination package items in butcher. Do not tape item. Exploitation mitigation.xollect USB device.dvd.xd gasman DNA examination.seaech cybercrime offender computer networking chat room phone explosion technology in order hack criminal's crime targeting computer intellectual property... Police support to army operationel.principleoperation police rules low operationel environment.. Planning preparatory and assessing police operational planning execution asssessor.base man power mission police station detention cell operation enforcement compliance legal...strategies.policing. Laboratory support. Low enforcement patrol main power... function justice system...tools mark... enforcement low safety security engineering electrical safety management systems.patrolmainten working build management Implications... Tom police security city power and College training system. Professional engineer electronics or electrical engineering... financial program.information use to generate information on preternime object indicator. Description and information...visible policing crime investigation.specialised investigation.intelligencr information management protection VIP government security regulatority.static security.physical security system tiditechnical indicator technology...perusal registrar system police investigation director. Manual system. objective statement indicating.infrasture development structure plan respect work report is base saps project.. Project poling facility management to maintain. Control system. community service reporting cycle quarterly and responsibility crime investigation implementation responsibility office .the non proliferation of weapon mass destruction act 1993act no87 of 1993..police interviews scenario.... engineering electrical city power electrique metering scenario vs. appliance electrique metering time table low enforcement appliance fire arm appliance customer CCTV radio security customer security it PC cyber customer appliance TV radio bomb missing circuit network vs. city power trade challenge assessment police engineering electrical time table trade theory engineering low non according manufacture and related, : Engineering modules equation algebraic linearity exponential ax by...a square +bbsquare network.... engineering planing components.researxh advanced field generation ,skill explain, development skill components,science natural mathematique,device protection components , discovery ... Engineering investigation resolve of crime framework regulatory engineering crime incidence...step collating crime information legal , crime source information ,indentity crime describe crime analyse.crime zone no protection over loa.identify plan subject completed source and need design describ analyse feed back trade safety... Engineering understand code conducteur.reason .learner. Discovery... Point reasoning. Question. Operationel.skill total achievable processes. Add value learner assessment...apply skill solution resolve problem... Questionnaire point of process or accuracy. Evidence...expected response evidence appropriate division correct trade Engineering correct multiply,evidence copper is correct each line trade theory ...DC current equivenlent force emt.. Junction rules Kirchhoff rules potential rules RC circuit. Shock hazard, thermal hazard tree wire system...terminal voltage... Key terms... instrument that's... deflection... Descrition Unit yes not Key equation terminal of single voltage source v terminal=sum -I re few=R1+R2+R3+RN Sum = junction rules sum Lin =sum I out, loop rules, terminal voltage of voltage source in parallel v terminal, = r,-I sum courant. Time constant t=RC. .direct current current during charging of capacitor, I=£Re-try=Ioe-tRC... Charge on discharge capacitor q(t)=Qe-t,£ Electromotive force, EMF work done per charge keep..the voltage output of a device is called v terminal and v terminal=€-Ir...Rs =R1+R2+,,,,,, current resistance find low him Resistance resistivity length found area resistance wire , copper across... Electric power... P=v.t...p=vsquare/r.. battery to power supplies... Cost..cost = power rating in kWh x number of our it run x cost per kWh.. Home monthly cost appliance every day possible includ dryer.micriwave.tv back ..if does give power give the should. A current.any thing in the socket 220v ..socket is cheap on the power is how much.. electricity continued to increase efficiency to offset consumption.. energy saving are account up being cheaper... 4.2.DC courent direct current vs alternating current ac .. Battery products DC current batteries voltage EMF is constant constant current circuit capacitor store charge current from socket... If look voltage peak +170v decrease through 0 to -170 and rise value 170 really be 110-120 that actually average but peak really is about 170..0oscillating voltage product electrique field..electron response to this oscillating field and oscillating back and forth producing an oscillator curent in the circular.. Graph voltage as functions of time current this average value voltage from wall socket it know as the root mean square,or rms, average.voltage varies sinusoidal.positive as negative doing average..vrms=0,707Vo and Irma=0,707I.0.. Instant 0.606...serir parallel voltage supplied Series resistance equivenlent.parallele... Performance a mechanical inspection and reporting on motor transformation workshop... components main...connected...AC current...Phase diagram...ohmic resistance only v=r.i...I=sin.w.t in phase R..AC ..I=v.sin.w.t.dt..v.i=sin Wtl,,,current lags ..WL =2πfl=x inductive reactance integrated... Operator j with rotate a vector 90 degree in anticlockwise direction 2j=1,j=1... power triangle..S=P+jQ..s=p+jQ...apparent, a=v.i =>Power ...Q=Isqquare..... DC generation...VT=Ea-Iara voltage full load...ia equal is ,, speed e=d|/St=|p/60/n=PN/60.2|60...2flux pN/120..f=p.n/60 sinusoidal AC voltage of factor induced EMF Conductor=1.11xe=(1.11)x(2fluxf)=2.22..emf par volt per phase x no of turn 4.44 flux ..Contactor... Instrument. Magnetic equation deflection's=B.I.I.n deflection torque TD=force x perpendicular distance...a=Ixb TD=TC ... Parallel movement must same.. Ish.rsh=I-im ..I=I'm(1+RM/Rsh... V=I'm(RM+Rse).. v=VM(1+Rse/RM..... e=d/dt(ll)...... Power wath meter consumption torque balancing energy in the circuit is directed registered..speed increase ..phase error occurred phase difference pressure error temperature.creping TD=TC ..flux =[v.i.cos/(krp)(DM/dflux)=[kdM/dflux].P..k=kRp..p is power consumption..m mutual inductance.teta .instaneouse current in pressure coil resistance v=√2.v.sin.w.t insta voltage ..IP=√2.ip.sin w...average deflection . average deflection... Value estimaton calculation Total 9.provide contextual information established : in city power and St peace college students engineering electrical research implementation trainings appliances electrical fault guyser stove light outlet socket current power factor demand factor mettering customer trade . theory current power delivery to the customer and customer appliance requirements need to trade theory outcom system engineering electrical.true power real power factor regulation system information.metering control analogy digital system sale kWh .metering customer demand single phase tree phase industrial.domeatic . Theory current state previously study trade theory to wiring db box mering client domestic appliances technology electrotechnolgy trade. Certificate license test trade theory validation low real power factor Reactance inductance impedance system metering challenge instrument controller metering reading cost 1@kwh,value1rand tax value certificate issue matter license code client mettering indicator trade metering . investigation sale . 9.8 compared resultant obtained statement visited investigation metering St peace college time table learning cost grade cost value time .need to verify by the college St peace engineering work study engineering works place workshop trade cost appliance time credit accreditation value and city power real time delivery and sale cost building real time consumer schedule..... 10. Title report should indicate. 11. Weak titles, strong title appliance electrique engineering electrical Fundamental system .power... : 4.2.1. Requirement appointment of plants engineering electrical consultant provision professional services city power and St peace College Anted statement engineering electrical theory city municipal provincial infrastructure visit development projects case study topic Portfolio evidence. 4.1.2 Sub sector manufacture main tenant St Peace college engineering learner assessment outcome transmitted generation power station metering electricity electromagnetic career outcome to visit joint venture city power government. 4.1.2.1 Special IST mark application _ Discipline mark application _roads and traffic engineering, road and storm water pavement evaluation, road transportation and traffic impact access studies St Peace college .relation circular assessment traffic map design, _parking and access studies traffic management .traffuc police. Enforcement low .study material in assessor assignment engineering, tom, Maintenance police technical support material advisor circular assessment guidelines study investigated principal.Nd information management system framework regulatory government Gazette act material design investigation city power with happened and methods research city power traffic registrar research engineer low traffic prevention low. _structure and building cause ways, Culver's bridge community. Stability equivalent equipment policy maintenance design meetings breakdown in the plant system _electrical: rural electrification substations, network protection and control design. Energy efficiency demand assessment development operational maintenance and tom repaired road traffic engine structure and building criterion plan -demonstrate -relevant experience key personnel - Bidder experimental skill methodology -total point -criterion professional liability insurance R3m for each and every insurance methods research qualifications and roles of each staff 2. Implementation framework regulatory legislation mandatory engineering electrical case study circular time table in visited work components innovation CVS city power Implementation close submitted of course daily tenders note assessment peer and self class assessment discussed note provide services trade skill report phase1,2,3,4,5,6 registered trade test reading experimental close Portfolio evidence documents week lee attendance release resultant statement 5.-2.1module: induction safety hand tools Conductor recall carry section join crimping soldering prepared fault find control contactor... Adhered to correct instrument is used fault find the control panel... distribution fuse AC heavy current motor control open circuit. Short under voltage retain fault single fault application start motor db system .fluorescence installation switch. Following controller main circuit phase squirrel cage induction motor can. Director line ward automatic start delta autotransformer constant torque phase rotation...generator AC machine transmission... commission capacitor starter phase slips according. 5.2.2. Code: recall application section of the training act 56, 1981, Gazette questionnaire exam conductor method Crimping joiner electrical mechanical. No dry joint a damage allocation. Specification insulator testing instruments cables make off core PVC armored MMM core high voltage gland ferrules and used to accord joint rating termination...sibs 0142 identify ply cable 100%,test gears circuit machine protection. 5.2.3 Objectivity: relevant color marking and correct use sibs 0140 hand tools identify checking forming character gas weld working piece trade correct according tender number Chain block ton max shake ton sign work select voltmeter ammeter energy meter select safety Identify electronics compose wire wound up to metal oxide capacitor ceramics diode transistor thruster %100 correct Solder 2.4 criteria recall the operation of different type of battery identify various type correct maintain according. Manufacture electrical system f connection applicable auto electrical... fault find auto electrical all safety aspects adhered to. Correct according manufacture check and adjust correct procedure settings manufacture camber and... Correct process adhered. Teat correct stable multivabrator use dual wave form DC AC average value peak frequency rams frequency all reading be programmed p.l.c ..6.1.3. Company requirements Specifically theoretical pass requirements mathematic and trade theory subject employer college apprentice relevant subject n1,n,2,n,3,n4,n,5,n,6 n diplomat saga award n body quality insurance assessment. Trade test and council engineering. Applicable value point relate years experience , certificate trade ,5%cleare time frame project, plan training clear roles response, equipment workshop, including.restrsint 6.2. Engineering n diplomat duet career and engineering n diplomat saga qualifications criteria time table n1, n6 trade engineering subject career mentoring outcome subject engineering electrical electricity .college implementation n subject... mathematique,engineering science , engineering drawings.trDe theory electrical,electrotechnolgy,power machine, engineering physics, chemical engineering department.outcom industrial electronic trE test theory.logic control practice learner level infrastructure construction electrique..Outcome engineering electrical career generation, transmission electromGnetic level continue.isat integration practice engineering lab workshop experimental...time frame framework. Practice theory integrate assessment employment saga qualifications Engineering n electrical criteria instituts,sasseta.employment compagny trade gov career graduate internship close city power careers.eskom career training career graduate saqa. engineering n electrique field panel wiring electric . drawing electrique,control logic .cable join .fridge.substation .generation motor .work 24month qualifications.categogie career mining gov and labour examination expiremental, guide .. .city power network metering and partnership Eskom generated transmission with appliance need. Consolidated for students have time table to visiting reading...security system information access studies or traffic police in building city power, regulation with student accreditation seta sasseta assessment police or circular to working database system entry visited in and outcom student visited day week . Attendance for reason study in trailing BT's city power card passport visa tourism negotiate career graduate student. Visited is individual self assessment student career. And class group school assessment coming for extra visited or large attendance... Access control ticket for interview career asks or donate individual research things student knowledge individual... .7.Labour health education for engineering in plant...labour mining examination student examination safety to prevention hazard or any dangerous incidence student labour give permission for engineering to visited plant. Coed if for insurance when is problem to health machinery. In compliance electrique for trade labor national diploma they are covered by inspection labor 7 .14.1Mining qualifications categories maw give permission to visiting categories foreman tradman electricity mining industry. Hazard exploinsion fault discrimination detection exposition mining plant solutions permitted for trade mining they are covering visited .power mining coil copper etc 7. 14.1 Dti industrial trade gives that permission Department education and go department. Any proliferation for trade. Development infrastructure for student's .city power cable trade in appliances Coverage human resource city power can be claim to data labor department mining department for student visited extra time work over time on training city power space municipality...power explosion...government....steam mining geotechnical investigation earth discovery in natural they are covered insurance student visited places and personal trainer learner working visited electrique engineering.. Technologies science innovation. 8. 19. Purpose design integration. City power. Study information on line career. Home customer, tender city power career. 19.1 applications for electrical services responsibility for providing electrique service to property owners in the city power. Billing service division two categories namely small power uses sup and large power use plug electrical services connection no greater than56kva in general type of connection. -Apply to convert a sup form post paid to prepaid Billy Apply for new prepared or postpaid dupe connection. -apply for a new connection. Region revenue... 9. 19.2.. feedback.guyser control, meter reading.schedul.tarrif info, prepaid vending, energy type, fault Loggins,load shedding, library, claim,tarrif info, tariff library , monthly meter ,meter reading, 19.3 meter estimated... Company secretary m smith. Executive director, .. Registration number 2000/3005vat numbers Insurance claims form electrify account number, prepaid meter street,code,postal address, city power number, call centre , description of how the loss damage, occurred insurance repaired replacement quotation . -leadership seniors management team, compagny.media. -theory city invention metering city old metering power.daig business with city power, Supplier vendor providing services, - company awad.compagny registration, originally tax pine, relevant,I'd,direct,B-BBEE,tender. 10. -20.Hearing conservation programme. Training awareness and induction programme attanded.noise exposed registered audiometry.during induction. _content ..loss, regulation city power -trainong shall cover, Content and scope training of the ihl regulariion records .10.-21. request for quotation Name date post, closing,tender, description, additional, business plan, quarterly report,AGM,red year report, annual financial statements, service level agreement, staring period, endings period. 22..Application for electrique supplies stand number, township, building name, street address type use, residential, commercial, industrial, Customer account.customer meter tick -New service connection. New service connection, single 80A.tree phase 80A, prepaid convention.other... - Convention single phase 80A, smart metering, repositioning of metering single 80A, -up grade download of supplies existing am requesting.new meter box boundary existing cabling. - city power agreement supply of electrique applied for is govment by low application liability according, routine monthly read, notification, connection, connection objectivity, registration,name domestic customer service connection not exceed 56kvA3phase ,80Am to supplies R1200, outcome. Customer log fault Measure the power of learning and criterion are registered trade mark of education testing services. prepare for criteria asservissemnt test exam skill. Discover practice full. Employment testing services are design engineering aptitude minute test design, criteria Type, test measure trade mark holder. License electrician assessment, apprentiship.license electrician theory and license practice. Wiring meter box sub and switch boor, men system, comment licensed, week basic licensed including readings comprehensive test numerical reasoning test Trade apprentiship.problem reasoning perspective math.mechanical.electrical.physic. Questionnaire company qualifications question theory electrique test power current. 24. Fault find and protective. Control circuit... -Installer rules: PVC flexible conduit isolating switch correct factor Sep Cable burette, depth cable, cable installer. 11. 22: metering error connecting prepaid, over load, no power accident on appliance power metering consumer procedure claim fraud crime metering Logged call, off metering minutes, City power and Eskom on line metering recharge prepaid: Compared metering old analogue indicator kWh day daily check by service accountability kWh building account energy meter take 1day20kwh room house estimate ×360days7200kwh years energy heater consumer indicator safety key lock metering analogies reading value 7200kwh, to rand cost Bill discount prepaid cash metering return back tax vat customer consumer building large medium tax redistributed 3200kwh real amount prepaid on metering digital. Customer's pays money 10rand have 3kwh to 5kwh, consumer readers .. electric wiring factor building installation electric and appliance design supply need real time cycle for that discounts technology cable police respire main tenant old cabling equipment years 10yrars replace cable high voltage transformer to cleaner reactance synchronous machine on designing reader's kWh 7200khw coverage policy main tenant check point kWh lighting was default fault appliance claim and fault old system design by networks system city power in interconnected news building and account nest number industrial news technology need to claim visited plant,,tpm engineering design AC DC current step task creation operational curent assessment 24. Purpose comparing estimate: Designing and investigation: electrical power transmission network: protected and controlled high voltage circuit breaker inside electrical grid substation relays scheme can be complex. -oil minimum circuit. -overloading excessive, curent not due to faults, -short circuit fault between phases, short circuit, 24.1 classifications - Oil circuit breaker OCBS, vacuums circuit, -SF6 circuit breakers -air circuit breakers, Oil tanks in oil circuit breakers or normally, oil is very good insulator has high dielectric electrique strength, cold oil is able to act as on insulator, C... design Good quality as below, Good heat transfer Quantity Short arcing time Comportment -high voltage used service, on circuit rating 600v, standard 4,160to 765,00v and 3 phase interrupting 50.000to50, 000,000kv, Electronic symbol circuit breaker... Transfo MVA, found in substation 600MVA, 3, 6 35 kV industries, -switch disconnection. Use control section switchgears panel... _Construction...bulk oilcinductor bushing, fixed contact, moving contact operating, Vic vacuum circuit breaker. Oil circuit breaker less risk, SF6 current breaker very less, - Mechanism operational, insulator, arc contact, frame lane contact, hand operator, electric solenoid, frame, Erie tropical, SF6, high sulfured fluorite, is air interrupted... 12. 29. Conceptual problem conception assures efficiency conversion of solar, steamer thermal hydroelectric renewable energy electricity lower acceleration rest... Integrated concept light draw power consumption.heatet calculi power dissipation operating bulb time costrb, cost appliance electric fusible. -Rating fusible high voltage relays protection advance: Z, impedance cable breaker tranfo, conductance fault detect 12..Generation resource .network transmission system Time table engineering science .physic engineering chemical, electrical engineering. Mathematics engineering, apply to the career outcomes skill to make a agreement arrange power city training visited engineering estimate resource internal and compare additional system explain reasoning engineering in point 24. Mechanical designer process equipment, area removal. Physic engineering .area...A1= reinforcement area jacket steam . Descripton unite Yes not Designing plant and economic chemical engineering and physic Engineering limited for corresponding limited years analogies computer. Specifically internal energy u to system robe do/St rate kinematics rate input to system (U1+g1+1/2v) dm1/dot... (U2+gz2+1/2.V saque).DM square/DT (rate of energy input)-(rate of energy out)=rate enegie chemical plant large quantities heat 150 degree Celsius ,1000kwh shaft delivery steam turbine power... 10 bar /400 degree Celsius..generator 1500v.. Diffuser,super heater .. dQ/dt-dw/DT=F square (H2+g.z/g1+1/2.vsuare)-f(H1+9z/g+1/2vv2.v1 square./g) Initial interest rate percentage n program computer print out following in job map ..voltage.. Emergency system energy .compare Electrogene group motoring test compare fuel supply direct bore store 98,5/1040,,cubical capacity 3200cm square, compression ratio 17,oto1, valve gear d-0-ho valve. Engine output max power peak150 kW,118,power peak redli e 3800/440º,mac torque n.mm343, torque peak..test Applied thermal engineering fuel tank Nth=hbh/htx100,,,swept volume. Vs=π/4 .Dsquare.L 100liter, pay load 756 .homologated, Warranty and service 3years kWh ..kmh rpm engine power 3800r/m power/mass(w/kg)61 Power/litre kW/h38,torque litre NM/I (P.V/T)n.t=(P1.v1/T1) working .volume of .head...low conservation transfoy in system Audit overall applied calculate efficiency work.donr.Ew=F.d. P=E/t....Ek=1/2.m.vsquare.Ep=m.gh.. E e=v.i.t. Eh=C.mΔ.t.,. efficiency ¶= energy out/Energies input....power output/power input..low Estimation system 13. 21. Engineering systems modelling N assessemnt for engineering police in St peace college was covert by lecture note and sylabus reading Introduction topics lecture note.and policy overview St peace college orientation guide and visited city power policy training circular note key learner apprentiship work job career. 21.1 framework and tools : scientific assessment making model exhiy -framework science police . Engineering electrical innovation Portfolio evidence Implementation in city power training complain claim police case study training recall resolve conflicts safety security in city power science analyze student case investigation.scenerio in city power . -Framework precautions : student prevention safety trade machine circular time table training city power learner prevent precautions visited development work study conducted trade infrastructure -Projection: precautions preparation frame study. Air polutioning science natural. -Project checks point gate point assignment engineering electrical: - Case studies: engineering electrical council engineering and trade council labor analyze in government city power framework regulatory legislation: mandatory legislation police power and mandatory engineering power constitution go Gazette power attorney to work empower development learner -model 14..22. engineering electrical: specifications of machinery equipment. Motor machine generation battery need to made verification load cycle., duration electrique,time ,duty, continue operational ,periodic cycle consisting cycle of a time of operationel,load and time of operational at no load there is not time energetizer and recycling and reacting in cycle duration factor,100tn+ v load cycle. Duration time electric lost electrique breakdown, on period operation load time inertia factor breakdown=power receive methods effective load applied to the motor thermal relay contactor _policy maintenance engineering remanufactured tom cleaning meeting do check action take activities equipment breakdown re valuation. System products city power breakdown energy metering guises break down .student breakdown exam weekend over load. Operation excessively.net operation .time net, 22. Engineering electrical planning organizing days shift task activities development system .day visited city power week.week.week.week. CVS Step task check revision Electrical engineering.ac DC machine engineering. Motor generation machine conduct move DC generator operator satisfactory a motor fundamental speed equation in put output, -parallel circuit distribution engineering reactance resistance impedance suspectance reactance total admission power factor circuit problem. In the find -Tc parallel AC generator balance magnitude heat, phases system: P√3.E.I cos phase power transmitted two receiver two single phase ,transfo secondaire A.load circuit source,If√4.I/c non oscillator transient. AC ,time of the rms I/√3.Im.. Company Serie circuit power distribution total suspectance,admistance,theory Engineering,zA,z,B,zc,,(a+jb),,,(c+JD),,(f+jg).. engineering capacitor operator angle free. Development Serie resistance impedance equation compare loop linears ,sum junction R1+R2+R3+......series 1/R1+1/R2+1/R3+...parallel .z1+Z2+Z3+...1/z1+1/Z2+,1/Z3.../G1+G2G3+..1/G1+1/G2+1/G3..../gradient vectors Developing Ra+RB+Rc+=Rsh V(RB+RC)=v(Ra+Rm.. RB+RC)(12-lm)=I'm(Ra+RM)R(Ra+RC). =I'm(Ra+RB+RC+R)=I'm(Rsh+RM). Descrition Total unite Engineering,zA,z,B,zc,,(a+jb),,,(c+JD),,(f+jg).. engineering capacitor operator angle free. Development Serie resistance impedance equation compare loop linears ,sum junction R1+R2+R3+......series 1/R1+1/R2+1/R3+...parallel .z1+Z2+Z3+...1/z1+1/Z2+,1/Z3.../G1+G2G3+..1/G1+1/G2+1/G3..../gradient vectors Developing Ra+RB+Rc+=Rsh V(RB+RC)=v(Ra+Rm.. RB+RC)(12-lm)=I'm(Ra+RM)R(Ra+RC). =I'm(Ra+RB+RC+R)=I'm(Rsh+RM). PMMC..is essentially a low level DC , parallel instrument..VM=Im.IR... -Engineering transfor system.comparing power distribution assignment watt output average output current wave line secondary statement a(c). Delta, delta start. Start delta start star. Zigzag delta zigzag star anaphase...auto tranfor .courent voltage transfo high voltage. Equation load circulating switch transfo.balance load application of.postef Electric technologies 14. 28. Compare training assessment and assignment engineering electrical to implement time table workplace workshop academic in trade social city power design factor training 15. 28.1 requirements: subject and module: -supervision in industry - Industrial orientation -industrial organization trade theory electrical, electro technique mechanitechnique language compulsories a, language business saga NVC level national... _anted :for subject engineering: Anted care educate training facilitator, and learners port Practically college academic: philosophies practical school guideline employment learner -28.2 what are didactique strategic investigate multidisciplinary. In development goal construct training materials and evaluation, how the model is didactic expertise as aspects education didactic of instruction and facts authority and telling authority written.: implementation circular St peace college didactic material framework regulator tools assessment for learner and trainer system information, file material metering to material didactic city power and Eskom material training education support .method measure instrument of evaluation. Visited p999ortal career scope assignment goal value cable population city electrification attendance is available. For employment 29. Methodologie .more -Orientation guidance school ,organization lessons ,compares organization supervisor industrial in St Peace collie regulation City power training: -Lesson plan grade .and class engineering technical Grade 12to 9,, engineering nated classn1,n6,. Level 1,4 , Lesson plan technologie -education technology matric and trade Engineering app video course ressours. -projection orthographic.. orthopadagogic , orthographic isometric Orthographic drawing, -activity , subject area orthographic projection is a technique used spatial vision three dimensional object,can be convent, -Lesson plan it association of training plan : projection city power light metering ,gysez planing and subject module required trade theory electrical module .wire premise power factor consumer plan.inatruction didactic form city power assignment: -Orthopedagogy pedagogic Module week: Daily 5: planing and preparing lesson to include -view lesson planning is critical activity for prepare Childress High phase Templars described. Key component : city power care training practice. Explanation overhead or projector used keep. -lesson plan: is a document that outlines the contents that your less step-by-step student teacher Lesson plan is usually prepare in advance either cover one off , activity,entire lesson , Lesson St peace college unity in trade training Day visited week visited.primary include activities -lesson plan: board city power metering days care visited St Peace college module subject integrate Portfolio assessment Activities. Objective lessons goal feedback science lessons anything from, experimental to monitoring or to diagramed Lesson plan run smoothly. -provide reflection: in the lesson greater way.. Lesson metering system city power goal megawatt and city appliance compare lesson module plan at peace grater. Break project down .module time table visited plant operations and break.sectiin checklist, Learn number life student complex, activities all orthographic drawing quickly grade level (9-12). Required 45 minutes subject area geometry problem solving share bottom shaped 3D objects copyright engineering are connected, activity view isometric, Pre assessor drawing challenge.. Circular police assessment. -management system information: In St peace college and integrity police system saps and city power , technician indicator persal personal police employment system data base.polfin police financiaire statement, training goal product humain resource and Indicator number titles -indicator building management implementation Indicator criminals dismental lab , Career secret purpose involvement laboratories indicator laboratory indicator training incident system support evidence report directors t implementation.... city power indicator trading lab record keeping finger print training student and St peace subject record clearence visited day working to report crime togheter,,,,method research crime evaluation in time table script transcript component fraudulent module appliance in city power and report over load required. _29. Teacher vocational: guidence counseling interview verbal communication career design in training city power and St Peace colege learn more career outcom engineering electric subject nated exhibition engineering generation transmission power station.electrician engineering to city power engineering career Questionaire design what is leading to pursue a career counseling have excellent written and verbal communication skills approach counseling assistance stator management attorney audiology ..what are the communication skills communication,wath guidance counseling characteristics off effective guideline counseling interview School may be focused on graduation and , career, balance career teaching that employee look for candidate, including college professional, Caracteristique Component Company engineering electrical: design generation transmission in training power metering design caracteristique level . Stability. And with the principal key power: load over load rating , switch, Company.. 15. -29 required management trainee class and company training How to management and control during teaching -how to organize teacher filing cabinet training room trainer room libraries visit to . How to organize a lesson plan . Trading Material , library training and report form city power organization, implementation trainings and St Peace college textbook reader module trainee Description management and control a class during your teaching filing system form city power Eskom, compliance form issue filing day week evaluation and certified lemons instructions metering Assessment functions 15..22.Requirement: implementation and stabilization to training visited trainee engineer, education..Anted examination training and labor inspection work inspection police inspection school ,compare industrial city power go inspection -general inspection category: and training schedule, Carrier training adducting modified I is additional training practical applications, -cycle of training application auditing , visited plant operations ,Step may take long or short time completed all operator must develop the ability to detect the ability detection abnormalities positive result achieve by student visited places working training system main tenant power city equipment in good condition and St peace good performance examination time table assessment, -autonomous inspection step 1,3 tentative inspection standards compared reevaluated to eliminate, detection and treatment of abnormal condition, Minor servicing of machines ,molds, gigs and tools . _29.1Organisationtidness, autonomous maintenance. Focused and elements: - Operators responsibility organizing stand for operator responsibilities adhere to recording.kwh -focus work and element promote organization and eagerly operation visual control work in control process product kWh / reader. -measuring instrument and foil proof device, element inventory measure instrument proof device and make sure they functions properly inspection and correct deteriorate kWh metering city power training is work , -focus equipment precisions ,operators must check precisions of equipment kWh metering geyser is précis instrument, -operation and treatment of abnormality, 16.Requireded hearted meter energy breaking component .destruction. Conductor.insulation.maneticfield . kWh/ ..joule input copper wire..component heater Peltier .break.explosion system, limited stability load . circuit breaker load heater Peltier thermocontrol....metering limited breaking , Air cooling system breaking linear systems circuit wire cold.component cold ,,220v .6,6kv..Peltier heater load 220+20volt Peltier 240volt reactance heater system.. Operationel, wrote: 34. Required: labour training quality body assessment,driven machinery regularite safety 1993,acting in term code practice., director. 17. _ content training city power and St peace practice assessment.quality body insured,duty authority and duty acreditation.saqa and sasseta institut sets mseta seta labour skill development field of activities. - training system record detention,time table subject learning reading Lifting machinery .and machinery manufacturing management. -codr description. Counter balance lift true ,rated capacity of 3000kg reach lift truck..covoyer logistics lighting ...order . Machine code compagny capacity . Pre start check detection , Pre operationel test in control,total item uncheck theory ,penalties ,UN heked,Pre assessment X2= maximum, Total Pre star and operationel, practical x time penalite item not specific ,penalite,body stack,fail stack correct position for travel close remove close down total operationel,time .insurance logistics.transpirt Riggin material construction supply... Drawings explanation: building compare St peace college knowledge design analysis investigation.aystem engineering and trade theory Designing system engineering electrical drawings,mechanical drawings, building drawing . orthopedagie . lesson.orthopedagogie.system module activity.. reproduction analyse design. 18. 32. Required operationel Appliance customer to city power and more St peace college time table reception and attandance assessment engineering, direct energy conversion system. The direct PDC MHD conversion system s. Plasma dynamic conversion system is a method of conversion system is a method of converting thermal energy plasma in to electric power without magnetho thermic .display energy bulb electro tube basic electrical energy government watt solar she produce 03to0,4 kilowatt, - insure generated energy Lab segment development. Power of about 93kw, government RSA provide 50 watts solar home system rural bee20-30%renewablrs variation analyze method, input data, Input scenario energy demand yes supply option yes ,use interface ,mesa database, reference energy ,tech coda parameters,messa gematrix , emission, new installation, result storage data ,option for supply electricity rural homes area 0,4 to 0,5 - Department of energy found total uncle trifurcate house rural unelectrifier, Total population 0, 31x061=<5298 millionxo, 32x0, 62=1000, projection house hold bee 19. 33. Thermoelectric effect..generation product natural appliance vs metering effect energy. Dc. Vs PWM supply type recommdation manufacture comparison of two technical control lin 25k ears vs system . I/max when dt , I/ IMAX should ,0,33-0,66 IMAX coefficient of performance,CoP=QC/pel Performance vs current, Thermal controller heating, Linear vs SMP tech controller 12.A up to 2x16A., -33.1.Design process: -Estimated heater loard system appliance and power total _define temperature.appliance and metering power system -choosing a Peltier elements. - heat sink -calculate - temperature sensors -powe suply requirements - Thermo electrical cool & Design a complete system estimate appliance guyser ,fridge and steamer system -Thermo electrical material build . Operationel principle, construction desig material, Designing -identification guyser stwMerter -caracteristic,metery le Benefits: function heater exchange, uses consumer production industrial , science. -object yes , metal plate yrs, Peltier yes Q,heater sink yes Q.rth ambiance, Estimation load dynamic,dQ/St. Load QC transfer THS heat Tamb+∆TSH [K].dt=THS -To=Tamb+∆THS-T0 -COp=QC/pel..Max.min Pelton dl..IMAX=68k,Imax=5A,Vmax=1,5A, current and voltage,I=IMAX (IMAX)=5Ax0,45=2,25, V= pel/I = 16,7w/3,83{7,42 Heater sink elements we need knowledge, required heater rejected vs current Qh/max=max=0,6.. Qh=Qmaxx0,61=41,. .. , Operationel 34.requirement metering Logic system Min Ter max term . Control logic loop Analyse function asservissemnt,radiotech radiostasie. 35requirement operationel , information management system,, communication skill admi telecommunication computer ATM air time metering design transmission data system policy Control source traffic function Arriva -Policy map input voice class voice not gateway interface ethernet, Service police input research priority yes, -ip on existing -inputline wath -policy output data ATM . Class default date, use ,attack ,account,queen, delivery,dial session, description, switch port access, describe rout age, passerel.police regulatory communication metering appliance vs metering city power communication data systems ATM process framework regulatority.over load transmission.dischage bill delivery, plan number control , government implementation gov taxation government .. Police detective microcontrol VDC, Di/DT, fault.. -- 33.2Required.analyse circuit system lineare limited Saturation vinput v output.permenent network input output meseare, Qmax,e(t)=u(t).s(t) System lineare relay delay position circuit analyse metering heater guszer . System aervomecanism position.plc Mean...e(t)=e(t)-r(t)= Input output .. E(t)=E.sin.to S(t)=S.sin (Wt+f) DC system transformer tension speed e(t)=v(t).s(t)=t.wt..command v(t).. Equation different linearity metering input system output system appliance .. St (St).v(t).A.(t)=w+w.. Database data send kWh rather system send kWh ether reception transmission telecommunication..policy relay delay discount value 10@r,2,5kwh ..input 10kwh 10rand buy system 8 rand transformation system asservissemnt.retard line power cash time arrival policy network.. system gov, Metallic layer fabric oxyde metallic alluminuim material R=¶.l/w... PCO=vcoxl....Vco (iMax/2)...n (po/p1)x1000;;; vccmax -vcc/vcc Requireded : engineering science physic chemical.. electrical..power machine : Construction architecture design file development.system input unity, control memorandum ram Ron outputs CTR display print, - data cou,ram ,rim,l/o,. 8 bit but memory system.logic diagram .. Engineering potential coefficient result and reducing voltage integration buy factor 3/5.initiL x = chart capacity .evoltage voltage solving different equation, 5 DX/St+3x/5.equarion incase voltage DX/DT=3x/5.reauired output integration, full scale voltage 5 bit d/a covert 0,2 volt digital in analogy 1111 ,SB = 0,2:full scale output =31×0,2=0,2 A event bit D/A delivery an output current, 100mA,let B=10/20=0,5 mA ,,1110=29×0,5=14,5 Analogue computer camparebdigital computer .. Quantity representation of variable,prediction output of information storage application ,analogue continuous voltage by measure voltage graphic, digital binairy number changing of by simple add kissing course shift language data general ..wireless communication . Metering and supplies electronics . Re R=¶l/a...π. d.....s=2π/d... screw..join cable make conductor...gauge...cable Density.volume.. d section across voltage mass cable kg , volume cubical cable cm square , area surface , meter cubical. Copper.aluminium.zinc.plomb. Oil .water .. Join cordon cable ferulure.mass join step make conductor . Skin effect ,Courson effect,joule effect Resistance to power current. energy.. P=R.I. T.... -test cabling material stress test eprouvet MPa cabling effect deformation elastic plastic .PVC polymers polyvil caotchouc .insulation papper material insulated cable join .plastic 220 volt Plastic.ceramic insulation high voltage glass 1500kv F= Qa.qb/r... €.... Cable Mechanical resistance alumelec..maichor ..transformer join Conduct hearth Deielctric.isulator charge discharge cable .high voltage discharge short circuit.. Magnetic material.,field electromagnetic Insulation conductor magnetic hysterisis ferromagnetic, H..b.i.u.,. Coil making .. Number support kV..number substation. On Fri, 14 Apr 2023, 17:58 TSHINGOMBEKB TSHITADI, wrote: 19.. 47.1.Requireded: operationel subject field saqa . seta implementation Saqa award certificate. Assessment conduct seta Saqa award diploma certificate n engineering.and St peace college training skill.mseta CHIETA.. development panel and control wiring Level engineering electrical.infracture development. Meeting saqa requireded I'd..no meeting statement skill development.id certificate award St peace college .db box outlet socket switch dol motor.transformer. Control instrument mechatronics, Career development city power graduat.implentation .career Continue trade skill supplementary trade meeting month trade . foreman ID: 258968 saqa commissioning domestic or commercial . ID: 10259 saqa fault find repair and maintenance tree phase , electrical engineering. ID : 263006 saqa ,demonstrating wiring of premise defining ID : 258937 ,install ,maintain low voltage,DB protection ID116466: inspection and circuit , ID: inspection and maintenance control and control panel and circuit , ID111388 :saqa electrical engineering and construction saqa I'd 67461: N3 code instruction category meeting ,A,B,C,.. Level2,3 ID : 258937..plant generation , distribution, construction mining chemical and energy sector, maintenant,DB, protection,electrical safety cleaning, --scope of work specifications.sans 10142, - circuit breaker ,isolator, contractor and relay ,install Db , inspection Db , ID10607, 10605,10634, - replace fault -ID 116434: control electric network from a control electrical . Centre sgb ,power plant .field manufacture engineering and manufacture. -Switch way panel wiring education technology. I'd ,electromechanic .electrotechnique .. teacher I'd .saqa . -47.2.requirement n diplomat engineering. ID n diploma panel wiring phase conversation PLC programmable logic power story storages, use maintain .graphic diagram design, St peace college outcome career generation power station and saqa award degree diplomat continue supplementary assessment student subject choose trascrip record no meeting engineering electrical diplomat dhet . Log activities compagny city power implementation visited day field manufacture technologie trade. Training - interpretation drawing electric code graphic. Purpose. Assessment : explanatory electrical plan create electrical plant , Content ,wath is purpose benefit of electrical , metering city power and St peace college workshop - how to draf an electrical. - tip for making electrical plan , interconnection of different component and fixture to the system .in training cooperation.visited - power line with details such as size voltage ,rating , power transformer and winding ,the main switch breaker and fused switch, - draft ,step layout scale drawing room ,cabinet ,step 2,plan it advance your electrical plan, step walk your pla building.,tips for making electrical furniture light switches and electrical outlet, - plan for additional outlets renovation,Amount table Lampe,yea,later ,appliance wiring plan, -electrical plan legend Celling mounted light ,duplex receptacle,telephone outlet switch. - basic electrical plans , - patients room electrical plan create your electric planfirm a patient , Basement wiring plan --when listings out item such a feeder breakers and wire size,for particular project piece of distribution equipment , Intern of electrical distribution, -schedukes are often included switch board and panel board, drawing to list number of circuit breaker load feeder ,size and number of wire , Project Schedule usually expressed in tabuled,organised self explanation. -typical ref, legend and - build drawing s: Construction project is completed is revised drawing,created and submitted,constructor ,high,any charge i-nitial design drawings . -Construction process completed . . -Electrical drawing and schematic. -designing installing troubleshooting electrical system requirements use variouse ,line represented. - design engineering and technician use schematics to build and troubleshooting -one line diagram: medium voltage switcgear one line diagrame , and power systems single diagram. Is often drawing flow of electric. Typical: major components in the power systems list system voltage , transformation impedance , interrupting rating and fault current just the basic .item -Drawing should be kept . - main control room of a -switching operation buy identifying feeders and the load they serve, - system voltage frequency phase and normal

operating position line diagram, - for more detailed view of an electrical distribution system,three line diagram is used phase polyphase A c , system drawings, connection. - diagrame show distribution component such bus rise ,bus plug ,panel,board , transformer ,small ,branch circuit, drawing alarm, system, -schematic diagram Purpose: man schematic diagram emphasis circuit elements function relate components, series or parallel Found ,inductor ,diode ,logic gate, fuses contact ,switch ,every circuit, -circuit breaker control schematic: wiring diagram.terminal for selection terminal ,relay ,load detector relay wiring diagram . -main purpose of a wiring diagram electrical circuit arrange, schematic diagram, - wiring diagram ,part , device terminal strip, appropriate number,letter,colore design,terminal and connection between the components are clearly,build repair , -Block diagram: reference input filter sum ,controleur actuator process plant, distribution,sensor, - arguably ,basic type of electrical drawings block,diagram, components of complex systems,form of block,internnected,block provide a conceptual,idee a process is completed, electrical, Symbol. Represent schema -logic Diagram: current gate and logic gate clock - breaker faillure relay logic diagram . Modern protective relays utilisation diagram to represent complex circuit process .electrical. - schedules. A buid Electronics use soldering.and desoldering . system..welding iron ,solder ,silver,or copper lead , desoldering,plug ,outlet ,cleaning disconnectorb,connector.printer circuit fabric film microship process. Silicon.plastic molding.. Fit recess .fit wiring .process.. Control - instrument method selector design metering process Appointment of service provider supply St peace college and city power delivery component lab workshop part time table subject.. -introduction golbak stage St peace college . -Scopes of project: projection requireded supplies to purchase and deliver total ,. -Special condition component Subject module metering 4.purpise documents. Budgets: a projection budgets St peace college city power time table fee.burasary.close graduation internership fund student.gov -Quotation value tax (vat) project : _time frame project is to commence success bidder Firm price subject , name of the compagny quotation close Appliance and compagny subject. - item description of good part number quantity Evaluation criterion (80/20). -request for quotation number -limitation to quote supply and delivery Item/ description of good //quarit///price/// bid price RSA 001 /engineering electrical practice workshop projectye engineering open view lab test lab and workshop practical saqa .dhet training exam papper .seta . asssessment police //// amount estimation fee Total include .8modul x 24subject x3month 200 projection years aman's test experimental technology.training integrity one project .. -deliveri period Specifications requireded for project: Item, part numbe r, performance b, size,model Inlet . Outlet .2.12 - : T=1/lamb.ln 2... Unity design - : Metallic layer fabric oxyde metallic alluminuim material R=¶.l/w... PCO=vcoxl....Vco (iMax/2)...n (po/p1)x1000;;; vccmax -vcc/vcc Requireded : engineering science physic chemical.. electrical..power machine E=T1-T2/T1=100%. , VP/P=VRT/m=v..sq Efficiency=w/Q=1-T2/T1×100% P1.V2/T2=P2.V2/T2 W=W=P1.V1.lnV2/v2.. SF=4,187lntf/273.. T2/T1=(P/P1) exp r-1/r W=P1.V1-P2.V2/r-1. PV=M1.R.T Q1=m1.C.∆T Q=m.l.v U=m.C.V(T2-T1).. (V2/V1) exp r-1=T1/T2, ¥=CP/CV.., R=cp-cv W=m.R.t.ln (P1/P2) P1.V1. exp r=P2.V2.v2 r W= m.R.ln V1/v2.(T2-T2) f exp 1= fv/V-v f exp 3=f(v+v)/v V=\.f f= C/2.l V=√¶p/p=√¶.R.T/m V=√F/u V2/¥1.=V2/¥2. f=f(v+Vo/v+vz) f=1/2l.√p/m E=F/Q1=Q/4.π.e dr.. Electricity. W=Q.V........E=m.g/q.....Ek=w=vq Q=C.V.....E=h.f........F=q.E.......E=1/2.C.v exp.........V= m.gr/Q.......t=R.c......S=w/F.....r=Q,/4.π>£or V=k.Q/r...C = €r.€o.A/d.....F=k.q1.q2/r sq Ek=Q.v.....e= v/d......1/c=1/C1+1/c2...........v=|.f W=1/2.Q.v.....m=EQ=(V/r).Q....C=k.€.oA/d.....q=F/m=EQ/m=vq/SM..... W=vq=1/2.m.v sq....@= Q/4.π.r.......w=2/2.c.v.sq T=1/lamb.ln 2... : Construction architecture design file development.system input unity, control memorandum ram Ron outputs CTR display print, - data cou,ram ,rim,l/o,. 8 bit but memory system.logic diagram .. Engineering potential coefficient result and reducing voltage integration buy factor 3/5.initiL x = chart capacity .evoltage voltage solving different equation, 5 DX/St+3x/5.equarion incase voltage DX/DT=3x/5.reauired output integration, full scale voltage 5 bit d/a covert 0,2 volt digital in analogy 1111 ,SB = 0,2:full scale output =31×0,2=0,2 A event bit D/A delivery an output current, 100mA,let B=10/20=0,5 mA ,,1110=29×0,5=14,5 Analogue computer camparebdigital computer .. Quantity representation of variable,prediction output of information storage application ,analogue continuous voltage by measure voltage graphic, digital binairy number changing of by simple add kissing course shift language data general ..wireless communication . Metering and supplies electronics . Re : 40.8..Requireded: award degree diploma saqa qualifications I'd : asssessment no meeting requireded.transcript completed supplementary subject : foreigners transcript.saqa qualifications I'd :71638. Higher qualifications. Primary registration status,saqa decision number, saqa 091/21. Registration saqa assessor conduct certificate . Saqa I'd instituts foreign.no meeting instituts accreditation saqa decission. Admni /30-39 NC's. Total credit . -assessment policy IE099-IE00.regular internal, Saqa decission 10105/14 advance diploma intermediary phase teacher.conduct... .n1-n3 national certificate engineering studies. -N1: Saqa ID6710, N2 saqa ID 637375,N2 saqa ID 67491..Entrance... I'd saqa award diploma N ... Ncv assessment plan isat . 40.7.1.Subject.. assessment task test assignment internal external assignment .assessment tool. Marking memo rebruc ,,.. topics subject outcom. Topic 1,2,. ,time and marks allocation 1h marks...examination training training formal. ...training exam rwiten permit and time table practice exam days. Fundamental subject ..icass .time frame, asservissemnt activities, scope assessment term 3, suggestions allocation .analyse grode.. Isat integrity practice..time frame .allocation require .. 41.1..required city power vacancies Estimated ICT service Research inovation: -table of content . Graduate internship Training center employee.visitor student apprentiship visited education technology high school and trade development school skill training .trade education career outcom exhibition engineering education training. 1.city power vacance 2023.for officer special and variations use career opportunities. Training oppoy . metering guyser . light city .training engineering career. 1.1 How to apply for city power vacances 2023.. student career granted. -meter reading submission: St peace college time table engineering electrical Portofolio evidence low consumer panel wiring customer and plant experience design cost power factor demand reader implementation in city power loop .. interlock system.training partnership test . outcomes career student generation power station transmission trading . - city power workplace ready to light up career artisan engineering. - name of profile - city power . -manager vacance. -city power officer vacancy. -city power specialist.. : 40.10..requirement : implementation --SAQA module award diplomat -Award diploma n.engineering electrical -Award institute foreign decission saqa -registration .award saqa n1,2,3,4,5,6. -Award meet documents. -Assement assessor saqa conduct moderator I'd: 202001305040/20191130002 Dhet exam nated: 201000203812/2004007064381/2011007434332.. 40.10.1 requireded of work experience logbook instructions programme code 5090840..national n diplomat.engineering studies electrical I'd :90674.engineering studies NQF level6, 360, credit saqa learner I'd 67043 national electrical engineering nqf .level6..learner name :tshingombe Tshitadi ,surname : Tshitadi Fiston. Number employeer : Details compagny St peace college city power: Name signature... Trade test technical environment Date : .... sign... 1.code.wA.0201 Purpose asssessment entry Scope. Assignment question answer assessment evaluation qualifications St peace and city power metering Interpret technical drawing: .evidence checking the drawing confirm relate equipment in accordance stand operationel procedure reading information written . Design db box outlet socket . 2.undertake numerical undertaking numerical operationel geometry and calculation formulae Scope . Terminate and connect electrical wiring Date . Signat Material conformance checking and existence new installation site correct location. Specifical W0302 checking existing and new installation .making terminal,connection. . Specifically . Manufacture.adjust and fixing wiring support tagging and labelling cable,wiring ,conductor and connection .undertaking , specifications testing of wiring and conformation to specific . Connection for conformence to specifications.use language . - interpreting circuit,drawing .preparing work plans in accordance with legislation and regularite requireded stand operator.using measures for installation testing electric wiring circuit .testing wiring enclosure and support system .indentification compliance relevant ,energising testing installation identify rectifying.completing report and documentation using short circuit comment relevant terminology,considerant plan Ning rescues or provision of assistance,isolating electrical hasard safety changes controller operationel parameter , Conditions air and refrigeration electrical special dues trade that lead diploma need experience , -Construction high voltage installation . -substation , -pane wiring Armature winding , -A. Running test function and recording fault and or equipment status indicated by buil in test function . equipment sub assembly, components connection and terminal , -removing replacing components and termination for confoi,isolating electronic , returning calibration electronic equipment sub assembly.recording ,obtening relevant circuit ,schematic manual ,isolating tagging ,and verified.refitting sub assembly , -specifie sub assembly,schema electronic recommissuoni g electronics equipment ensure,entering routine electronic ensure conformance, -drawing reading drawing job . documents listed.maintenance .single phase. -Repaired control loop system look evidence that confirm skill.obtain and interpreting engineering specifical technical information software hard .data diagrame historical to system components and operationel. Consultant system other relevant plant personal with respect to control loop characteristics. Confirming function malfunction of the system. Component . checking operationel character controleur device,signal conversion instrument and final control element . . identify fault the control loop for correct operationel .monitoring the response of the control system , using appropriate fault find diagnosis technicien and procedure throut technical. Monitoring Comparing collected data.operational. -engineering . dismantling..service item setting appropriate test and calibration equipment w..control mode checking control ..install commissioner the control interpre data calculating control loop characteristics.install calibra.access and final control accessing data sheet. Circuit.diagrame engineering.install sensor..identify cabling conductor .locating inspecting .. Criteria Trade manufacture seta merseta sasseta accreditation .saqa assessment training -Job instruction engineering electrical St peace colle and city power electrical wiring .statutory and regulatory.connection support.. Method material.test wiring for approval work Learning technical outcome.self checking ., -activity log sheet.state following equipment hand tools . Desoldering tool soldering fiting welding pencils Activity :voltage power supply.long Bose portable electric hand drill.drille EXC. Flat screwdriver used driving or fastening positive slottel scree.flat screwdriver is used in driving or fasteriing.join two support lead melted around,side cutter pliers used for cutting or terminal wired testing .soldering .join cable .chisel.resistance .ms program.. -hNd tools label program.criteria .score .identify.tool... Terminating and connecting electrical wiring and electronic circuit.test termination . asservissemnt criteria. Practice... Dhet..faculty electrique engineering. Completing diplomat logbook.application application -Subject : electrique trade theory, industrial electronics, engineering science, mathematics, electrotechnique drawing engineering.. -Logbook cover page.: St peace college Exam internal assessment and external -application letter :diploma St peace college assessment circular irregularite final award saqa qualifications award diploma , certificate.vist city power training career inovation trainings -Letter from your employer.career St peace college trade practices assessment engineering.policy practice school engineering. -date period work specifically subject n6; qualifications irregularite..regularite assessment.. Portofolio evidence Poe: asssessment policy evidence low -Candidate work 18month St peace college time table trading practice asservissemnt criteria saqa. Completed duty . -Duty city power St peace career patrol . Certificate I'd -Summary: academic info n4.n6.. Irregularite assessment police Poe's relate low . Copy statement 12; subject n4.n6 .. Subject condonation award.subject irregularite trade theory .. transcript academic time table.. maximum one, 2.relevant work experience .apply for diplomat, engineering electrical note adminwork experience in government departments ..qualify development social.energy . education department asssessor, instituts Unity description Yes /no Regulation %= (220-210)x100/210.. Equivenlent transfo..E2=I2.Z2+V2.. E2-V2=I2.Z2... _estimal 20kva,2500,500v,single phase tfo.winding r1=8ohm .x1=17 ohm. Wining R2=0,3 ohm ,X2 =0,8.. primary voltage 2500 ,. O,6 solutions E1=2500v,R2=500v. Turn ration N=2500/500... Ration =E2/E1=600/2500=0,2.. apparent power s=20kva,. I= S/E =20kva/500=20×1000/500=40A.. - -refering to secondary side. Ro2=R2+k.square r1=0,3+(0,2) square×8=0,62 ohm Xo2=X2+k Square=0,7+(0,2) square x17=1,380 a) 0,8 lagging Volt.reg v=12 Ro2cos #+I2×0,2 sin @/E2.. Volt reg = 40×0,62×0,8+40×1,38×0,6/60 VR=52,96/500=0,10592,. % VR =10,59.. Secondary terminal voltage. V2=R(1-v2) V2=500(1-0,10592) V2=447,04.. 0,8 of leading. Voltage vR= I2 to square .cos@-I2 X2 sin @/ E2.. VR=40×0,62×0,8-40x1,38×0,6/500. VR=O,O2656..%VR=-2,656%,,, Point to key Secondary terminal voltage. V2=E2(I-vr) V2=500(1-0,02656)=513,28v. VR..VR=12Ro2 cos @+,I2Xo.sin@/E2. VR=40×0,62×1×40x1,38×o/500. VR=o,o496...VR=4,96% V2=E2(I-vr) V2=500(1-0,0496),,v2=475.2 volt.. Estimation : 40.6 management multiple backroung task and interrupt driven system. Clusters system information connection . Monitor display , basic knowledge suggestions reading embaded engineering electrical. -basic circuit theory ,fund arrest ,how to configure pin microchip microprocessor Hard basy trainer bird work station PC running windows Mavis Linus 13v DC motor power main gate gate mplabx cross compiled spreadsheet excell log entry visited internal external St peace college engineering access and city power access meeting agendas menute . - project takeaway : how to read analogies voltage compare to implement a capture period measure fundamental digital,open loop and closed loop process control , _ fundamental concept unit introduce process control electromechanic I/0. Process control: automate process control engineering deal architecture.. Automate process .signal yes control loop processing microprocessor computer fax signal yes, signal yes amp ,signal card , process yes ,tacho meter yrs , open control yes record count positive yes , ,, 40.7 maintence inspection: components program, -inspectiins check operationel back , -inspectiins lighting inspection:bulb regulatority exam control ,transformer hardware and and gasket exterior light, Electrical inspection: being simple carbon monoxide detector,as well as flashlight and testing equipment timers and photocell, should be inspected and exhaust fan, HVAC inspection bfiltrrbdict filer 41.purpose. Study case ..St peace college energy rurale and city power energy. 4.1. Electrical grid system design to provide electricite way from it generation to the customer system ground from design kilometre and connection countless complex interconnect. Workplace workshop practical projection ..lab system fundamental Test problem requireded.. Eskom and city power , -generation electricity ,power plan warn to convert mechanical energy of turbine into energy use generator except solar power , photo voltaic cell ,power plan ,energy fuel. St peace college workplace. Test lab experimental practical. Result recording operationel: kWh ..kV..day - transmission :large high power line are crucial component .power plant pass through stepped up voltage voltage increase in electricite by transformer .by distance with typical maximum distance. Result recording operationel test. kWh .kV.ka day Reasoning step up transformer are used is when long distance a conducting.long distance.loss energy problem acceptable level, Estimation Pre test metering transmission grid extra high volt 265 to 275 kV AC , DC joint power station 600Mw, and power station 600-1700Mw,,hydro electric plant 200MW.. transformer industrial power plan and medium size power plan 1500 me..interlock 110kv and up . joint connection distribution grid transformer 150mw power station metering city power plant , 2mw industrial custome power station , solar farm ,eolien farm ,rural 400kw,50kv transfo metring buildings house dispatch . Estimation const inspection area building infrastructure. Test lab open views stwich gears inspection fault .circuit breaker fusible ,Relais Power system of electrical increase descrease note lab Supply test month average costly Methods use for switch control circuit during normal operation, permit to switch off on the generator ,transmission distribution equipment. If faillure occured short circuit heavy current pass.feature switch . Switch operate in order isolate health system b, discrimination,,switch air break switch medium, - oil switch they operate in oil arc that occurred fuse joint ,anormal temperature. Daily week time open ,time close date - circuit breakers: switch can disconnect the circuit but it is done equipment which open close a circuit under all conditions like ,full a circuit fault condition ba circuit break can operate both manuelly can opere under high voltage type current . Test day daily month , -relay: is basically a device or switch detect fault system then it provides the information to circuits breaker , - can operate to prevent the health . Primary relay is connected Relay trip circuit ,relay electromagnetic induction test , Type of switchigears,2 outdoor type,2 indoor type,66kv .. Test transfer function is networks the magnitude,1/√1+T-square.Csquare. phase shift network.. Vi/Vo=1/RC/JW+1/r.c ..test close open system .. Test generation : phase synchronous machine electromechanic energy conversion device operate on synchronous,speed,of rotating magnetic,field , synchronous machine,based energy, synchronous generator . synchronous rotor . - NS =120f/p, f the supply ,p is the number of poles in machine, Working principle key principles key features : sychronouse motor asynchronous motor ..self starting , synchronous machines excited machine requireded,machine two applies one DC , synchronous machine operate at constant speed called synchronous speed, generator voltage of constant magnitude can be operated, lagging, leading unit , synchronous motor relative, , Test daily week time load Relever trade. Integral derivation day Unity descrition Yes/not Equation of sychronouse motor . V=Eb+Ia(Ra+Jxs). Voltage v.eb back EMF .is armature Ra armature resistance .on system day working duty shift -resultant voltage: difference between the voltage applied v.and back EMF, E=V-Eb,. Er=Is.(Ra+jx.s) Back EMF generated: Eb=ka.¶a.Ns ¶a= constant of the armature,¶acmagnetic flux perpoles, NS = synchronous speed of the rotor .En=v normal excitation lagging power factor EB<v under excited.over excitation. Input power: input of synchronous motor .Pin=v.Ia.cos¶ per .phase .Pin = √3.v.l.ll cos 3phase .. Mechanical bpower in rotor Pm=Tg.NS Pm=En.Ia.cos(a-¶). . Pin =√3.vl.il.cos¶-3.l square.ra.. Pm=pin -Ia.Ra.. A load angle between en and v, angle between band Is ,the is gross torque products .Na is per synchronous. - stepper motor Ster angle ..£=(ns-nr/nsxnr)x360. Step angle the angles of rotation of shift .NS = number of stator / number..poles .Mrs of poles Motor asynchronous..nr-ns/NR slop squirrel..star current as..z.c .p. DC motor machine .. Resolution 360degre/ beta accurate of stepper .n motor speed.n. Requireded learner induction machine system engineering electrical St peace generation GB ..machine system hr resource compatible run .-transformer three phase Connecting start delta zig zag.primary wind , secondary winding, . interconnected order phase clockwise power . Y...VP=Vl÷√3. Vol=√3xvp... D. VP=vl...vl=p.. Y.∆. Turn ration TR=NP/Ms=VP/√3.v.s.....1/2....step=1/,√3 ∆.y....TR=Np/NS=√3.vp/v.s .Delta delta line vol primairy secondary vl~n.vl...line current primary IL/n. Delta star vl_ √3.n.vl. ..Il = IL/√3.n Start delta ..vl_n.vl/√3...IL=√3.il/n.. Start start vl =n.vl I=IL=IL/n... Estimation data 50 Va supply,line voltage 100v , primary turn 500, secondary turn 100, n=NS/nP=100/500=0,2 ..vline sec =√3xnxvline =√3x0,2x100=34,64volt -V phase sec = v.line /√3=34,64=√20 v. ILine (p) = Va/√3.v line =50/√3x100=0,289 Am.. I sec = ILine = ILine (per)/√3*0,2=0,834 amp.. construction... Transformer voltage regulations.. Voltay regulation or percentage value by which transformer output terminal voltage varies, up or down from it load value... Condity when IL = 0 open circuit to fully load IL= iMac maximum current for a constant primary. , Regulation=change in output voltage/ no -load out voltage Regulation = v(no load)- v (full-load)/v.no -loAd.. -percentage % reg (down)=v(no-load)-V(full load)x100%/ v no load . % reg (up)= v(no - load)- v (full load x100%/v.full load.. Estimation transformer has open circuit no load terminal voltage 100 volt and same terminal voltage drop 95 volt on application of connection load transfo regulation ..0,005 or 5% ..(100-95)/100*100% V1 E2..E2-V2=I2.Ro2.cos2+I2.xo,. Capacity load x 100% 40.2 required purpose.control .lab -introduction lab is to investigate application of embedded control controller to real time algorithm that employee analog input and anslog outputs engineering electrical St peace college time table and city power training days care computer algorithms to implement a closed -loop processor from machinery or motor speed hortorinh .conduct system manager security physical.hin feedback can used to lineare inhertly non lineare process and results in zero steady state control errors, -objectivity assignment engineering electrical time table and training city power St peace college. 1.general power output to implement system management variable machinery motor supply voltage. 2.implement a tachometer operation using pic timer engineering electrical and trade. 3.develip program code academic to implement a picture 40.1. requireded: case student training practical school and practical schools engineering faculty, saqa registration .setat registration St peace registration Practical school learner secreatairy help school efficient ly by performing clerical task support principal,work in building along with parents and student school often .school mission career, no formal edu post high school college St peace ,job gate welcome visitors,students making appointments,maintening student record handing incoming and keep the school website event update calender ..St peace training and city power training to city calendar. 40.2-question how to construct impressive teacher Portofolio learner training . Portofilio evidence.career job .degree scottlande . 40.4.education leadership and management .St peace college and city power management trainings work subject. -School engineering electrical training practical governance .online master of educational management on line honour leadership inovation.bucheler saqa qualifications award degree diplomat learner practical, -40.5 guide formative training homework qualifications saqa diplome d etat homework back laureat Management school...gestion school established school modernization exigence democratic.registration inscription student generation attributes.card admnission . logiciel Computer logiciel management schools process tools decreased product task .modules function information school college admnise division ,class St peace , management of campus.management student status, tutorial family. -Management faculty eny: classes engineering electrical lecture professor and training.planing honorable planning, assessment.yes -management examination time table.inspection work permit at peace college adm I, exam questions attributes classes evaluation scores,genure reports In city power external training job - management schools fee bursary Engineering.step. . -principal planification . organisation orientation school professional St peace college manual guidelines, administration school at peace give to learner policy instruction assessment learner to participate in circulum and visited subject. Test PC school air time -functionnality test education program .note globally service global services client . functionality,rapport .quality. Administration at peace collt give .the role of school management.school date the class and the power hierarchical function activities roles function rectorat at peace college and charge of training external company government definition.orientation school professional source stress school stress . The level students adapte situation place social development projects government state teacher inovation democratic acess in the age of leave work children. child care . level diplomat. Time table admnise evaluation statement report teach class subject counseling portofilio.means transport place .source difficulties for training transport.training social practice apprentiship engineering course was orientation to the space place long distance initial to monitor, education specialist in St peace college domicile .filing animation social model .-.the administration workable of Poste school . description post admnistrator supervisor.task school admnistrator college etablissement good function to teacher vocational and the trainings . Task functions.budget manage logistics give line to marks reference. -chargr admnise to coordinner all the process admnistrator management political and evenement .to resolving conflicts problem school in training external.to response counseling students resolve conflicts -legislation school subject after assessment Portofilio evidence learner excepter deall misconduct pffense discovery learner in St peace College. To city power work. have definit school domain show management recruitment registration new students or contract news compagny external internal composition commission and differente ., - counsel teacher difficult entry dismissal.procedure.prise , Commited management schools circular framework.importance, - to have definit sanction and reward primary deceive procedure input in case of abandoned post graduate or leavers school to practice or irregularite . sanction in education News legislation.or skill development implementation learner.in St peace college.hr ruling . -practical school report rwiten efficient parental learner in induction learning student at peace college to going to city power to complete a project class assignments.assessment year report primary tracker run circular summative.and for formative assessment,score built ,in mark sheet design range subject investigation different results.expectation accrose range assessment results.defineed and speedly asssessor workbook strategy report run regular census data cloud policy, - week course audiovisual and social class room creation ICT technology digital tools learner critical digital literacy , -international studies in educational inequality theory .skill student basic employee in access to different level level of education academic understood generalite theory outcomes system worked primarily school junior .ethic deontological generality legislation school ruling resourcereality legislation school and principal admnistrator act importance in saqa qualifications citysen to frequently industrial. -Duty of chief college and department management schools, . political public education state evaluation,control priority norm posterior.level organisation type model office bureaucracy. _flexibility of circulum, -caracteristic of students and training St peace college to training caracteristic job compagny city power,to give a good operationel results projection goal target day visit, -management leadership measure political principal objective professionalism in job training caracteristic direction ordering collegial.counseiling director . Management intermediate division organique function authority administration directives, professional and pedagogy training, execution government, judiciary low . legislation low schools.functionnel authority teach assure orientation coordination pedagogy -.situation curriculum flexible examen national Central admnistrative contract d 'autonomie protein project study chief of .changement of authority power of teachers society civil offer influence democratic in circulum asssessment.and training examinator _ to me 50.2.Requireded: engineering St peace College, ensuring maintenance care components discovery,idee improvement tips self no coping constructive bridge design ,defey force militaire operation , Policing investy resolve of crime frame work regulatory collating information indentify crime , engineering, -Defense militaire operationel force -mil STD 13231, content ,paragraph application general ,standard ,other goverment , publication ,order of precedence , definition , commercial entity gage , commercial off the shelf cot product, containers,decalmane,design activity documents functional marking engineering, -joint electronics type designation system industrial St peace college .industrial electronics safety factor low defender land. -Manufacture identification, nato supply code for manufacturer nscm , nomenclature,order of precedence, part number identify number safety electrical trade theory safety manufacture sabs sans health outcom . Procurement instrument identification number,set selected item ,drawing ,sequence marking unit ,safety and police framework low system manufacturers St peace college , General requireded general government name and type number ,join electro design system ,St peace college CCTV ,alarm safety trade control system offensive training marks manufacture award , Army nomenclature system identification number :I'd permit St peace ,inspection contractor Gove gagr identification b, Limited used multiple use special item identification college , use of unity pack bag, reference design goverment bdesignAtor, reprocurement,electronics tubes electrical part tubes, name plate data for article,special requirements for marking of container, identification of set article of or , indentification,marking articlevbatterie warning high notice radio active,ion ionising radiation,technical literature caution:safety electrique OSHA sabs IEC commission St peace college system manager, schematic wiring and cable diagram , chassis identification modification work order number, sensitive electronics device,location of marking ,general marking process: ,marking on surface size and form of character label,material process radius of careers ,mounting mountain spectral Gass opacity permanency Nd durability,facsimile,issue marking for air transportable reprocurement perman y legilo,subject . 50.3 system engineering management, system engineering process ,sabs sans St peace time table outcome career engineering safety electrical engineering generation transmission.assessment require , requireded process and analyse allocation , function analyse allocation,design synthesis, verification, system engineering process -system analyskse and control ,workbreak drain Struct, technical review trouble model and simulation .metrics .risk management risk management Planning organising.product improvement strategy organisation and integrating system development, contractual , -system engineering fundamental introduction,: general , application,referred facility grounds system grounding Nd power distribution system ..St peace college safety career generation.policy Bonding shielding and grounding relation grounding safety..relation investigation low cabling geotecnical city power Eskom and customer occurrences repot. - lightining discharge fault protection noise reduction summary of requirements,resistance to earth communication lightning requireded typical resistivity summary,soil effect effect, measurements of soil resistivity, measure technical ,one electrode method four terminal ,earth electrode , system,general ground rods buried gride plate s metal frames,water incidental metal, resistance properties simple isolated electrode ,, Transient impedance , electrode ,fall of potential metal extension ,test paint - lighting phenomen influence of structure height ,strike like hood attractive less than 1000,flash parameter mechanical thermal conductor impedance inductor capacity couple earth , -fault protection :power systems fault ground circuit interrupt, Conductor direct current resistance, alternating current impedance skin effect AC reactance proximity effect, resistance property vs impedance property , effect geometry,standee cables , rectangular Conductor tubular Conductor, structural , - signal substem : networks configuration..signed point ground lower multi ground higher frequency plane Defense mil STD 1285D, Fsc5920,, circuit breaker FSC 5939 switch thermostatic switch rotary shall sequence counter,open frame construction color passed molding,Google switch ,printer wiring stddata regardless,data is applied directly surface information described , intend ,use ,issued of DoD marking for shipment,serial transportable item reprocurement,permancy legibility,name caution plate caution , Mil 200 system reference goverment ,non governmental whose identified gate drawing format size letter and .drawing numbered system duplicate of assignment number, Output.physycal architecture product element and software code decision database.input function architecture,enabler ipts decission database automated tools models, -control constraints gfd cot resablr system ,concept substem choice organisation procesudure, Reusable SW system concept subsystem choice , Activities: allocated function and constraints to system element, synthesis system element alternative, asssessor technology , alternative, definition physical, definition system products wbs development life cycle technical integral system select preferred concept P.E=q.v q.is charge moved voltage rate doffence other change. P=I.V....E=P.T.,Talk= resistivity .l/a , H= ∆c m.(T1-T2).. -PI.=v.i.cos.. IL=p/v.l.cos unresolved transmit 1009.10 m w..at 10.kv.resistance of 100km... Wath current need to transmit : Requireded: metering system decimal relay rotational test ,sequence line,cut off ,direct switch register ,in the group in which the calling division starter search for pilot switch .a time device, switch finder respond pilot ,switch final connecter ,signal controller send impulse stepping ,interconnector ,div ision .... Alternator . Loading effect heater current 50.require regime sinusoidal Transfor mer Group 1 hour induce clockwise radio .. Group 1, hour indice 0,-4-6 Group 2,hour indices 0-10-2 Group 3,1-3- Group 4-2-11 Connection couple YY. M= n2/n2. Y.d. M=N2./N1.√3 Dy..m=n2.√3/2.N1.. U1.=4,44.n1.sfb.. N1=u1/4,44×sfb.. Loss ion .copper. : Uco.Ico.cosπ ZS=m.U1/I2... Model: fresnel diagram .. existing Constance kapp E=V+Ux+UR I1(t)=IMAX.cos(wt) I2(t)=IMAX .cos(wt-2π/3) I3.(t)=IMAX.xos (wt-4π/3) H(M,t)=3/2.Hmax cos (p@+wt) Point award 102. Point have awarded skill 80 point responsibility 25, mental effort 25.working consider.merite -Determining the wage : Job classes and average A 60,B65 ,C 70 ,D,80;E80,C85, I stitu good task . Task exer measure responsible judgement application of technical legal account statistics engineering. Abscent .labour overall... -Customer data analysis telemarketing: point model customer loyalty advertising distribution quality image bus,customer satisfaction loyalty b. Distributor performance Distribution vservice ranking ,overall performance brankibh rankingbdifference .. custom ER returned St peace college time table .an city power metering - Item report financial mode product .RK 1mB memory's Specifications Display ooerater Printer print meter Memory back Power consumption operating dimension,AC 120v, 99;day data Label printy Power requirements Power consumption Operating tem.plotyer size.product ... -Personal call plan Telephone call plan matrix customer number metering code Level factor call plan ..error association observations .level call plan analyse market . Winner trading plan.nwt profit bnumber win pay out number .proffi loss .. Bulletin trade test job returned posted job postponed.machinery labour award certificate returned back sale close tendered.close maintenant manufacture invention supplies.policey returned award low,cost Point award 102. Point have awarded skill 80 point responsibility 25, mental effort 25.working consider.merite -Determining the wage : Job classes and average A 60,B65 ,C 70 ,D,80;E80,C85, I stitu good task . Task exer measure responsible judgement application of technical legal account statistics engineering. Abscent .labour overall... -Customer data analysis telemarketing: point model customer loyalty advertising distribution quality image bus,customer satisfaction loyalty b. Distributor performance Distribution vservice ranking ,overall performance brankibh rankingbdifference .. custom ER returned St peace college time table .an city power metering - Item report financial mode product .RK 1mB memory's Specifications Display ooerater Printer print meter Memory back Power consumption operating dimension,AC 120v, 99;day data Label printy Power requirements Power consumption Operating tem.plotyer size.product ... -Personal call plan Telephone call plan matrix customer number metering code Level factor call plan ..error association observations .level call plan analyse market . Winner trading plan.nwt profit bnumber win pay out number .proffi loss .. Bulletin trade test job returned posted job postponed.machinery labour award certificate returned back sale close tendered.close maintenant manufacture invention supplies.policey returned award low,cost St peace college hand over report returned investigation phenomenon development skill design planer in time table Portofolio evidence low .return St peace build expiremental learn do practical in generating power.station career .science student knowledge obtain engineering electrical in installation day month log activities career inovation.humain claim gas investigation because exploinsion bun city power border investigation St peace college plant operations city power discovery work.and definition professional.. That conduct research student St peace field career generation metering in city power.to ensure city power operationel plant part and maintence components bcity power understand science b to develop circuit calcul must go..to planing city power road going ..nature idee time table.. revolution in city power accessories to devices critical eayes observe custome in city power creation idee.implenting time in city power cited plant and author industrial society and force defense and police security. -defense military engineering.police development systems information in city power inovation skills mean creative new idea access student in training be researchers.. - : Requireded:lamp tungsten filament, typical lamp incasecent tungsten filament, tungsten halogen, mercury vapour, fluorence tube,metal handle,high pressure sodium, mercury vapour same, -typical application general purpose Tash lighting large area commercial. -efficiency luminescent 13-30,40,to,130, -bulv lift hour,dining controk, excellent, starting time promo,colours - energy saving,lamp colour,luminaire, utilisation factor reflection,direct and occupacity movement , Power 1000, voltage 249,ano4,2, a,b,v 1,6 m coverage n/a over head mount eater dimer wxHxD - determine procedure when planning installation. BxDx heam index)100= totak kWh requireded . B= length to head in meter ,Db= with to heart in meter heath index = intensity b 50.1 radiotechnic : power amplificator TV sons base oscillator line pentod. Input out put. Control system Caracteristic: eat indirect cathode insulated wire Vi6,3. -source wire - use conditions nominake rms Voltage anode. Va 179..250 v Voltage grille vg 170- 259 v Current .62 to 2,4 ma, Coefficient amplificator 10 ,15 ohm Resistor internal pent 0,2 4,6 mA Capacity grille ,capacity anode ,14,7pf,anode 0,4 capacity anode cathode CAG less 0,8 of , Value limited peek voltage vap max 7 kV, voltage of anode Va max 300 v,voltage grille 300v, cathode current max 30w @89 MV ,8,5 Installation light tube amplifier input Telemer video output pentod,power pentod,flip -insulatiin in receptor conversion in case we Cree out mixage voice voltage insulator mean level of power Heater nose IR(t)=VRFcos(wo)=I(t)+∆v1. QR(t)=VRFsin(wot)=Q(t)+∆v2.. 50.. Requireded.rypical telecommunication street distribution for new urban resident using side. Legend electricity pedal,rod wat,lot 79,,asdl signalmstreet cable ,concept,asdk modem customer, -Typical underground copper twis par network telephone exchange.. Cabling of homes telecommunication completed fuid to home line mode possible fault to comming the telephone voice port fault to switch relay connection -basic home network system typically cabling connection telephonic and data services. Legend . modulation socket,modulator coaxial socket,optical.. Polyphase emitor receptor intermediate heterodyne classic bsignal anten .module phase Phase shift - canal of transmission GSM interval area antene to cell phone.. BTs yes BSc yes msc yes network...wave electromagnetic fix plane impedance caracteristique area E,/H=377, numeration fibre coder filter decode input 300,Hz out put 3,4 khz 13 bit recharge system energy product restore.. battery,, returned 50.. Requireded.rypical telecommunication street distribution for new urban resident using side. Legend electricity pedal,rod wat,lot 79,,asdl signalmstreet cable ,concept,asdk modem customer, -Typical underground copper twis par network telephone exchange.. Cabling of homes telecommunication completed fuid to home line mode possible fault to comming the telephone voice port fault to switch relay connection -basic home network system typically cabling connection telephonic and data services. Legend . modulation socket,modulator coaxial socket,optical.. Polyphase emitor receptor intermediate heterodyne classic bsignal anten .module phase Phase shift - canal of transmission GSM interval area antene to cell phone.. BTs yes BSc yes msc yes network...wave electromagnetic fix plane impedance caracteristique area E,/H=377, numeration fibre coder filter decode input 300,Hz out put 3,4 khz 13 bit recharge system energy product restore.. battery,, returned metering overload system : Requireded: electrical, standard characteristics, standard, electrical equipment, circuit,cables and wires,electrical fittings,TV,FM communication and security home automation, system , accessories certificate of compliance,sub -contractore rate, - electrical installation in homes up to electrician light plug point position advice in valuable regulation, electrical layout ,number point , connection ,stoves,geyser, the electrical distribution system , planning ,number appliance, planing ,designer manufacture be sider ,increase ,the wiring of premise part low voltage installation, refer sans 10142. Voltage equipment suitable operationel maximum steady RMS over voltage equipment master rated accordance application, -single phase 230/240,volt 60,89,50,Hz standard frequency for netral sans .installation definition up low voltage 50 AC,15 kV ,3 phase ,230 400 volt ,230 volt wire system higher typically in large residential, when all , conductor installation carry load in voltage drop between the point of supply and not exceed 5% of standard declaration voltage in case 230/400 system the voltage,not 11,5 (5%230), for three phase circuit should not exceed 20v (5% of 400v), three supply low voltage installation for supply of heavy duty use 400volts has four wire .three phase red white blue ,one neutral, .neutral Blac or blue, wire voltage , lighting . circuit Conductor, - Conductor standee wire allowed the free flow of electricite most are conductor copper and alluminuim.heavy expensive, 1,A,100m , - compulsory standard: specifications for circuit , breaker govment notice Gasset 20461 of 17 September 1999.Vc 8036,, compulsory specifications for aerth leakage protection unit gov notice n22886 gov Gazette 10987 ,16 October ,1987 VC 8035, Compulsory operator switch for fixed installation gov Gazette, compulsory socket adaptor gov notice R442, compulsory specifications for safety of electrique cable with extruded solid dielectric insulation for fixed Vo 1900/300 notice R1169 gov gasette , compulsory specifications b, flexible cords ,electrical appliances notice ,sans 10142 sabs 0142 is concerned with ensureing the basic safety safety bof electrique installation , To ensure the protection of and properly and properly functioning installation the designer of an electrical installation , - the characteristics of the power supply,the nature of demand ,the operating environment of each part the installation, it especially important to award of acceptance building -process or handling of flammable or exploinsion if want safety features for installation prescribed,such features contract documents, - provision of sans 10142. Apply only to the selection and application of electrical equipments and accessories which are part of the fixed electrique installation, they do apply to the construction and safety of equipment appliance and accessories.. Foundamental safety live part test finger,during normal operation .permit normal operating conditions temperature safe 70 celcyis,90 bin case metallic part earth New electrical installation should not connected to supply include a protective conducteur, -use electrical equipment insulated, .. Installation replacement installation should accessible ajoiining premise building there is easy access to it location ,it is not like physical damage,dust moisture accumulation on liver , - Distribution board ,in case requireded sans 10142, function safety equipment number circuit road ,mounted dange notice appliance or in position stationery cooking enclo extended, - busbar bare copper aluminium conductor fixe test circuit breaker unless fully test sans 60439 - I / IEC 60439-1 sabs IEC 60439; the current density of copper busbars must not exceed 2,A/mm sq for current 1600A, 1,6/mA/mmsq, I1,I2,I3 code . - disconnecting devices: Transformation disconnect switch supply disconecting devise control . - Circuit breaker: circuit breaker open switchh automatically over current protection RCD residual courent ,clause 4, sans 10@42 alternatively switch load and line miniature circuit breaker 1A to 100A, - Earth leakage protection: one of the main risk frame fault installation supply sans 164-1 sabs type outlets in existing installed socket outlet rewired 3 phase neutral complied sans @64-4 surfer 16 A intended for connection surge protection sabs IEC 60309-2 and of dimension as sans 377 377 stove couple,surge due power systems operational number buildings area 180m sq on height 69 m strike 12 years line expose . - circuit.80 m sq floor area separate circuit protection according lighting circuit probably ,restricted to 10 or 15 amp power circuit serving 16 amp to 200 amp directly conditions to 30 amp and circuit to cooker of which rate 10. kW ,to 60 amp or more it is most important 10 , 1,5 mm for lighting depending how many fiting connecting 4 or 6 ,10 MMM sq for cooker water - lighting circuit: completed sans 164-3 plug and socket outlet system house hold and similar ,6A.,250V ..A.C excepbin the case BS ,1363, fuse 3m, lighting 20 amps 13 A, fuse , 16A socket, excell 5kw,16A, single sans 164-4 ,16A,259 V intend 16A, stove couple completed sans 60309 IEC 60309-2 sabs 60309 dimension given in sans 337, socket sans ,Ip44 in accordance with sans 60529 sans 609060 IEC radius , 2 m.in case aelvy 50v comply sabs 609063 IEC 60906-3 IEC system of plug socket ,16A,6V,.. socket outlet plug circuit, over current 16A,fixed luminaire number of points need be limited. - Mixed load circuit: Disconnected close proximity 16A, /. 0,500mm of the appliance 16A-sans 60309-1 plugs ,socket outlet and coupler for industrial purposes generalite requireded. Sabs IEC 60309-1 dimension sans 337, sans heater ,16A power .. Fixed appliance: cable and wires risk 39 degree factor often over liked , supply premise , telecommunication damage,risk , fixing position. - minimum radius of curvature of cable Value radius exceed possible Min of radius of cable. Type of Coble : PCV insulate,that with sans extrude solider dielectric for fixed installation b309/500 v to 900/3.300v .,papper insulator, Type of shearing : unsheathed sheathed unarmoure ,. Diameter of cable d<10, 10<d<25,,25<d<40.. Minimum radius of curvate 3d,4,d,8, -common cable types: open wiring 250 protect above Arial cable ,surfix ,flex or reciprocal ,cab tyre,house wire -Wire size and current ratings: Core size wire size mm.sq 1to10 Current 13 to 54. Wattageb3,25to 12; -typical Appliance : lighting , powe circuit. - maximum cable circuit length at gizwn circuit breaker Nominal cross section area mm sq 1 tib16, Circuit breakers current rating among 19 to 109, power factor in unity maximum permissible voltage drop between phase and neutral is full circuit breaker loading is 5% of 239 v ,. 11,5;only -core size wire size mm 1,5 to 24,. - current 18 tib1000,:. Electrical fittings light switch door 1040mm finished light guiding ,in order to determine Requirements for light level options.push dimming versus ritory ,level option .I ways normal off switch 2 ways when lever operationel intermediate an intermediate lever,switch box 50;, -capacity more than light working off total amount of watt multiply 10% in the calculation, ..8x59 w dow light= 400w , 400wx1,33=533,. 533+53, 19% 566 it show 600 , socket outlet plug ,. Single or double 16 amp 16 amp -TV FM communication and security: Telephone Nd data socket bell press, TV,FM home movement detector base on passive infrared PIR,protective switch,accoustish,beam interrupting detector,glass break , vibration sensor,CCTV image detection it recommand that where possible products be used evaluation compliance. Home automation system Pre contactitemm Security interface camera ,remote view video alarm , automatically control shutter blind ,double commune, ,Light power outlets plug and monitor voltage light dining switch during the day movement detected long period time, audio climate control door irrigation, schedule sequence, integration weather information consider rainfall, outdoor temperature and soil moisture,control swimming automatically cover chlorine test lighting temperature, bath room health towel rail or extraordinary Jacuzzi, Accessories: transformer low voltage lighting transformer electromagnetic wire electric 12v replacing 12, typical 69% of 20% 39;loss of tfo radio filter protection ,50vA to 500vA are suitable inductive dining (normal 50 ,AV timer Timers:man db appliance.. - Energy efficiency occupancy.,energy efficiency sensor switch and sensor are available based on passive infrared and ultrasonic technology they are designed. -Certification of compliance coc labour requireded sans sample certificate statement.. estimation years type electrical number poles current rating short fuse ,239,400 523×In = KA.. Switch disconecting. -laege plant products rate,up date,selling , Demolition compressive sans 50197 -codr analyse concrete Labour rate guidelines: concrete grade 1,2 ,skilled worked semie skill general worked ,total cost day, - wage per days . -Sub - Contractor rates Electrical sub contractor rate Description../unity// price - basic db 3 phase install ,each,R9,500. - basic distribution board install each R6,5900. -3phase lighting protec each R 850,00 - fit ripple relay geyser R859 -fit sub board build R2,759 - supply and lay 3 phase cable form boundaring metre R 129, supply and lay 1 phase cable from boundary metre 35 .00 Cable to external light metreR 69.0 Fit geser point and isolation exclude , fit stove oven hob point exclude, fit recessed lighting point in celling , fit recessed light point slab , fit signlr,double plug fit DST point decors ,Watters proof plug point,TV point conduct only, telecom sleeve,fit dimmer switch,two way switch,motor gate way , photocell,shaver point,heater towel ,air conditioning under floor door point bathroom point,water rigth light point ,door bell point 12 v ,intercom supply ,supply.. Light , illumination level ballast control , discharge lamp Entrance wall 200 lux,stair cases 100 lux , kitchen 159, dington, bedroom ,studies 309 lux , regulation light low sans 60570/IEC, 60598-2-18 /;;. Geyser pressure ,pressure control valve, expansion relief, safety valve , Lamp incandescence bayonet, Edison screw compact fluorescent,tungsten,halogen,metal, 6000h,3hm colour,14000 to 2400 - : Requireded.: Assessment St Peace college contract learner.skill career development,science electrical Homework class work.assessor conductor engineering. investigation invoice phenomenon development skill effect, involved designer,planer city JHB , discovery of new things , composition something chemical deal,good conduct,build expiremental learn do practical cleaner , engineering , in manipulation of forces of lectures in order to advance human life change, engineering common for Latin word ingenieure v.means to design .to design to device to mark: Word to perfait 2 G generalite, successful engineering must improve the quality of life , -science is the study of the nature and behaviour of natural thing and the knowledge that we obtain them . -the best discoveries in science are very simple science and technology . - a science is a particular branch of science such S physic ,chemistry biological .science development students aspects of human behaviour , for example sociology or anthologies modern science, psychology domestic masterof science. - investigation investing if someone, especially N official investigation N event situation or claim they try to find what happened or wath is the truth gaz officials Re investigation the cause of an exploinsion which bodily damaged a house homsphire police still investigating how the accident happened he ordered an investigation in the affaire, -engineering is work involve in designing and constructing knowledge, impossible tungsten while neutral earth resistor mega watt. -Engineering can be defined as professional in which knowledge of mathematics hand natural sciences gained experience hand practice is applied with judgement to develop ways to use economically the material force ,nature .wath engineering do conduct. - I research in advanced field aerospace chemical. -the development lab workspace in workstation shop find tender.. -the test and verify they founding. The use analysis en everything the do such the components development.body -the involved in construction or building of new model -the ensure the operation of a plant place making . -the ensure the maintenance components of the plant part. -the offer technical support no water to go found water, -the are consentence engineering , The must understand mathematics hand science . Designing, NY system to develop must undero design,you must become devil risk tak,planing give a clear road map ,or direction, Every work done perfection is done twice concise , I planned, I actual,an ideo be born I your mind , you nature idea ,next year no say that .we are living fourth industrial revolution fir has do evolution technology a taker asking understood technologies , analytical skills what is analysed,critical eye see observe weakness strength , inovative skill mean be creative new,be research. : -40.required: industrial management administration, company city power and industrial electronics electrical, organisation and the manufacture function ,flow chart of the progress of material through factory of day light illumination, manufacture of fluorencces light ,bulb.and appliance time table St peace college. Organigrame . algorigramm.principlev line, bloc -rougth casting metal unload of metal story yes r.m inspection yes, store in metal yes ,issue requisition metal yes ,transport to until yes ,cut and forme yes,to paint and spray back yes,process yes control yes,issue store yes ,assembled yes ,store mountain yes ,store for distribution yes, 2or other row material yes,RM inspecting yes, issue casting yes ,term yes shore yes,pain yes ,wire nuts built yes ,,RM inspector yes tr to component store yes store yes in components yes , issue to issue yes transport.. - critical path analyse ET Earliest time, latest time, preceding event, marketing, recruitment assistance,record assistance, education training, recelare industrial relations, event , marketing -education training ricelarise industrial relations, - Observations: last time in minutes waiting for instruction compensation getting out tools,locking interruption by firmament, total, prime cost variatan e, break even analysize fixed cost ,marginales,sales revenues,total cost ,trade mark , relation good -work study time advisory, design step1,2,3,4 test Mount wire assembly,order an purchase, orders and purchase 40.9. requireded maintenance ..maximizing equipment effectiveness: measuring availability . Availability= operation time/loading time =Loading time - Downtime/loosing time. Available=400 minutes/460 minutes ×100=87. -operating =0,5 minute/0,8 minute ×100=62,5% -net operating rate = actually processing time /operation time =Process amount ×actualncyclebtimr. Net operation . Rate =400item ×0,8 minute ×100/400minute , Performance efficiency= net ,= operating speed , Processed amount x actual cycle time/ operation time = 400(item)×0,5 minute ×100/400 minute =50% 0,625×0,625×0,80×100=50% -A . workings hours per days 60 Min ×8h=480min -B.plane down time scheduled. C. Load time per day =A-B= 460 D: stop losses perminute break down,20 minute. E: operating meter day ,C-D= 400 minute G: out per day =400 items H: rate of quality products 98%, I: ideal cycle time :0,5 Min / item J: actual cycle time =0,8 Min F: actually processing time =jxG=0,8×4000. T: availability=E/c x100=400/460×100=87% M: operationel rate = I/j×100=0,5/0,800×100=50% -Overall equipment effectiveness=T×L×H×100=0,87×0,50×0,98×100=42,8 -equipement.: 1Loading

time ,operating time ,net operating time, 2Sigx bx bag loss: equipment failure,St and adjustment, idlian minor stopp,reduce speed , Calculation of overall equipment -1availability= loadtime -downtimex100/ load time. - 2available=460 min- 60 Min×100/460=876 -3performance theoretically cycle time×process/time operating Performance efficiency=0,5 Min ×400 unit/400 ×.100 =50 Rate of quality = processed /amount defective/processed . Rate of quality products=400 units -8 unit /400 .. Overall equipment= availability ×performance Efficiency ×role of quality.. 50..Requireded..dti labour exam.and labour appliance time table availability.break time table exam operationel time table management system information.st peace college performance.. competency engineering implementation.. development social infrastructure in gov energy's department.. Actually process irregularite final.regularity compensaylabour .to skill city power visited ... system.. Requireded: engineering St peace College, ensuring maintenance care components discovery,idee improvement tips self no coping constructive bridge design ,defey force militaire operation , Policing investy resolve of crime frame work regulatory collating information indentify crime , engineering, -Defense militaire operationel force -mil STD 13231, content ,paragraph application general ,standard ,other goverment , publication ,order of precedence , definition , commercial entity gage , commercial off the shelf cot product, containers,decalmane,design activity documents functional marking engineering, -joint electronics type designation system industrial St peace college .industrial electronics safety factor low defender land. -Manufacture identification, nato supply code for manufacturer nscm , nomenclature,order of precedence, part number identify number safety electrical trade theory safety manufacture sabs sans health outcom . Procurement instrument identification number,set selected item ,drawing ,sequence marking unit ,safety and police framework low system manufacturers St peace college , General requireded general government name and type number ,join electro design system ,St peace college CCTV ,alarm safety trade control system offensive training marks manufacture award , Army nomenclature system identification number :I'd permit St peace ,inspection contractor Gove gagr identification b, Limited used multiple use special item identification college , use of unity pack bag, reference design goverment bdesignAtor, reprocurement,electronics tubes electrical part tubes, name plate data for article,special requirements for marking of container, identification of set article of or , indentification,marking articlevbatterie warning high notice radio active,ion ionising radiation,technical literature caution:safety electrique OSHA sabs IEC commission St peace college system manager, schematic wiring and cable diagram , chassis identification modification work order number, sensitive electronics device,location of marking ,general marking process: ,marking on surface size and form of character label,material process radius of careers ,mounting mountain spectral Gass opacity permanency Nd durability,facsimile,issue marking for air transportable reprocurement perman y legilo,subject . 50.3 system engineering management, system engineering process ,sabs sans St peace time table outcome career engineering safety electrical engineering generation transmission.assessment require , requireded process and analyse allocation , function analyse allocation,design synthesis, verification, system engineering process -system analyskse and control ,workbreak drain Struct, technical review trouble model and simulation .metrics .risk management risk management Planning organising.product improvement strategy organisation and integrating system development, contractual , -system engineering fundamental introduction,: general , application,referred facility grounds system grounding Nd power distribution system ..St peace college safety career generation.policy Bonding shielding and grounding relation grounding safety..relation investigation low cabling geotecnical city power Eskom and customer occurrences repot. - lightining discharge fault protection noise reduction summary of requirements,resistance to earth communication lightning requireded typical resistivity summary,soil effect effect, measurements of soil resistivity, measure technical ,one electrode method four terminal ,earth electrode , system,general ground rods buried gride plate s metal frames,water incidental metal, resistance properties simple isolated electrode ,, Transient impedance , electrode ,fall of potential metal extension ,test paint - lighting phenomen influence of structure height ,strike like hood attractive less than 1000,flash parameter mechanical thermal conductor impedance inductor capacity couple earth , -fault protection :power systems fault ground circuit interrupt, Conductor direct current resistance, alternating current impedance skin effect AC reactance proximity effect, resistance property vs impedance property , effect geometry,standee cables , rectangular Conductor tubular Conductor, structural , - signal substem : networks configuration..signed point ground lower multi ground higher frequency plane Defense mil STD 1285D, Fsc5920,, circuit breaker FSC 5939 switch thermostatic switch rotary shall sequence counter,open frame construction color passed molding,Google switch ,printer wiring stddata regardless,data is applied directly surface information described , intend ,use ,issued of DoD marking for shipment,serial transportable item reprocurement,permancy legibility,name caution plate caution , Mil 200 system reference goverment ,non governmental whose identified gate drawing format size letter and .drawing numbered system duplicate of assignment number, Output.physycal architecture product element and software code decision database.input function architecture,enabler ipts decission database automated tools models, -control constraints gfd cot resablr system ,concept substem choice organisation procesudure, Reusable SW system concept subsystem choice , Activities: allocated function and constraints to system element, synthesis system element alternative, asssessor technology , alternative, definition physical, definition system products wbs development life cycle technical integral system select preferred concept P.E=q.v q.is charge moved voltage rate doffence other change. P=I.V....E=P.T.,Talk= resistivity .l/a , H= ∆c m.(T1-T2).. -PI.=v.i.cos.. IL=p/v.l.cos unresolved transmit 1009.10 m w..at 10.kv.resistance of 100km... Wath current need to transmit Requireded: metering system decimal relay rotational test ,sequence line,cut off ,direct switch register ,in the group in which the calling division starter search for pilot switch .a time device, switch finder respond pilot ,switch final connecter ,signal controller send impulse stepping ,interconnector ,div ision .... Alternator . Loading effect heater current 50.require regime sinusoidal Transfor mer Group 1 hour induce clockwise radio .. Group 1, hour indice 0,-4-6 Group 2,hour indices 0-10-2 Group 3,1-3- Group 4-2-11 Connection couple YY. M= n2/n2. Y.d. M=N2./N1.√3 Dy..m=n2.√3/2.N1.. U1.=4,44.n1.sfb.. N1=u1/4,44×sfb.. Loss ion .copper. : Uco.Ico.cosπ ZS=m.U1/I2... Model: fresnel diagram .. existing Constance kapp E=V+Ux+UR I1(t)=IMAX.cos(wt) I2(t)=IMAX .cos(wt-2π/3) I3.(t)=IMAX.xos (wt-4π/3) H(M,t)=3/2.Hmax cos (p@+wt) -Requireded: -Job evaluation form :St peace college career engineering electrical and city power visited training days care -job descrtion : St peace college and city power engineering electrical .saqa qualifications classes job title , skill , -training time dexetry complexity, basic, responsabilite,control,over proper, dealing, concentration working , mandatory, physical, . -Job classification: career engineering electrical saqa .dhet maq ..and training city development . category Close tendered Grade a.,b.c.d.e. Point possible up to 100.,/ Award mark Saqa .close labour returned explanatory..city power . inovation career award .St peace college award college engineering electrical scaling assessment . Close tendered trade sta award invented .award dhet diplomat Point award 102. Point have awarded skill 80 point responsibility 25, mental effort 25.working consider.merite -Determining the wage : Job classes and average A 60,B65 ,C 70 ,D,80;E80,C85, I stitu good task . Task exer measure responsible judgement application of technical legal account statistics engineering. Abscent .labour overall... -Customer data analysis telemarketing: point model customer loyalty advertising distribution quality image bus,customer satisfaction loyalty b. Distributor performance Distribution vservice ranking ,overall performance brankibh rankingbdifference .. custom ER returned St peace college time table .an city power metering - Item report financial mode product .RK 1mB memory's Specifications Display ooerater Printer print meter Memory back Power consumption operating dimension,AC 120v, 99;day data Label printy Power requirements Power consumption Operating tem.plotyer size.product ... -Personal call plan Telephone call plan matrix customer number metering code Level factor call plan ..error association observations .level call plan analyse market . Winner trading plan.nwt profit bnumber win pay out number .proffi loss .. Bulletin trade test job returned posted job postponed.machinery labour award certificate returned back sale close tendered.close maintenant manufacture invention supplies.policey returned award low,cost St peace college hand over report returned investigation phenomenon development skill design planer in time table Portofolio evidence low .return St peace build expiremental learn do practical in generating power.station career .science student knowledge obtain engineering electrical in installation day month log activities career inovation.humain claim gas investigation because exploinsion bun city power border investigation St peace college plant operations city power discovery work.and definition professional.. That conduct research student St peace field career generation metering in city power.to ensure city power operationel plant part and maintence components bcity power understand science b to develop circuit calcul must go..to planing city power road going ..nature idee time table.. revolution in city power accessories to devices critical eayes observe custome in city power creation idee.implenting time in city power cited plant and author industrial society and force defense and police security. -defense military engineering.police development systems information in city power inovation skills mean creative new idea access student in training be researchers.. - : Requireded:lamp tungsten filament, typical lamp incasecent tungsten filament, tungsten halogen, mercury vapour, fluorence tube,metal handle,high pressure sodium, mercury vapour same, -typical application general purpose Tash lighting large area commercial. -efficiency luminescent 13-30,40,to,130, -bulv lift hour,dining controk, excellent, starting time promo,colours - energy saving,lamp colour,luminaire, utilisation factor reflection,direct and occupacity movement , Power 1000, voltage 249,ano4,2, a,b,v 1,6 m coverage n/a over head mount eater dimer wxHxD - determine procedure when planning installation. BxDx heam index)100= totak kWh requireded . B= length to head in meter ,Db= with to heart in meter heath index = intensity b 50.1 radiotechnic : power amplificator TV sons base oscillator line pentod. Input out put. Control system Caracteristic: eat indirect cathode insulated wire Vi6,3. -source wire - use conditions nominake rms Voltage anode. Va 179..250 v Voltage grille vg 170- 259 v Current .62 to 2,4 ma, Coefficient amplificator 10 ,15 ohm Resistor internal pent 0,2 4,6 mA Capacity grille ,capacity anode ,14,7pf,anode 0,4 capacity anode cathode CAG less 0,8 of , Value limited peek voltage vap max 7 kV, voltage of anode Va max 300 v,voltage grille 300v, cathode current max 30w @89 MV ,8,5 Installation light tube amplifier input Telemer video output pentod,power pentod,flip -insulatiin in receptor conversion in case we Cree out mixage voice voltage insulator mean level of power Heater nose IR(t)=VRFcos(wo)=I(t)+∆v1. QR(t)=VRFsin(wot)=Q(t)+∆v2.. 50.. 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BTs yes BSc yes msc yes network...wave electromagnetic fix plane impedance caracteristique area E,/H=377, numeration fibre coder filter decode input 300,Hz out put 3,4 khz 13 bit recharge system energy product restore.. battery,, returned metering overload system : Requireded: electrical, standard characteristics, standard, electrical equipment, circuit,cables and wires,electrical fittings,TV,FM communication and security home automation, system , accessories certificate of compliance,sub -contractore rate, - electrical installation in homes up to electrician light plug point position advice in valuable regulation, electrical layout ,number point , connection ,stoves,geyser, the electrical distribution system , planning ,number appliance, planing ,designer manufacture be sider ,increase ,the wiring of premise part low voltage installation, refer sans 10142. Voltage equipment suitable operationel maximum steady RMS over voltage equipment master rated accordance application, -single phase 230/240,volt 60,89,50,Hz standard frequency for netral sans .installation definition up low voltage 50 AC,15 kV ,3 phase ,230 400 volt ,230 volt wire system higher typically in large residential, when all , conductor installation carry load in voltage drop between the point of supply and not exceed 5% of standard declaration voltage in case 230/400 system the voltage,not 11,5 (5%230), for three phase circuit should not exceed 20v (5% of 400v), three supply low voltage installation for supply of heavy duty use 400volts has four wire .three phase red white blue ,one neutral, .neutral Blac or blue, wire voltage , lighting . circuit Conductor, - Conductor standee wire allowed the free flow of electricite most are conductor copper and alluminuim.heavy expensive, 1,A,100m , - compulsory standard: specifications for circuit , breaker govment notice Gasset 20461 of 17 September 1999.Vc 8036,, compulsory specifications for aerth leakage protection unit gov notice n22886 gov Gazette 10987 ,16 October ,1987 VC 8035, Compulsory operator switch for fixed installation gov Gazette, compulsory socket adaptor gov notice R442, compulsory specifications for safety of electrique cable with extruded solid dielectric insulation for fixed Vo 1900/300 notice R1169 gov gasette , compulsory specifications b, flexible cords ,electrical appliances notice ,sans 10142 sabs 0142 is concerned with ensureing the basic safety safety bof electrique installation , To ensure the protection of and properly and properly functioning installation the designer of an electrical installation , -the characteristics of the power supply,the nature of demand ,the operating environment of each part the installation, it especially important to award of acceptance building -process or handling of flammable or exploinsion if want safety features for installation prescribed,such features contract documents, - provision of sans 10142. Apply only to the selection and application of electrical equipments and accessories which are part of the fixed electrique installation, they do apply to the construction and safety of equipment appliance and accessories.. Foundamental safety live part test finger,during normal operation .permit normal operating conditions temperature safe 70 celcyis,90 bin case metallic part earth New electrical installation should not connected to supply include a protective conducteur, -use electrical equipment insulated, .. Installation replacement installation should accessible ajoiining premise building there is easy access to it location ,it is not like physical damage,dust moisture accumulation on liver , - Distribution board ,in case requireded sans 10142, function safety equipment number circuit road ,mounted dange notice appliance or in position stationery cooking enclo extended, - busbar bare copper aluminium conductor fixe test circuit breaker unless fully test sans 60439 - I / IEC 60439-1 sabs IEC 60439; the current density of copper busbars must not exceed 2,A/mm sq for current 1600A, 1,6/mA/mmsq, I1,I2,I3 code . - disconnecting devices: Transformation disconnect switch supply disconnecting devise control . - Circuit breaker: circuit breaker open switchh automatically over current protection RCD residual courent ,clause 4, sans 10@42 alternatively switch load and line miniature circuit breaker 1A to 100A, - Earth leakage protection: one of the main risk frame fault installation supply sans 164-1 sabs type outlets in existing installed socket outlet rewired 3 phase neutral complied sans @64-4 surfer 16 A intended for connection surge protection sabs IEC 60309-2 and of dimension as sans 377 377 stove couple,surge due power systems operational number buildings area 180m sq on height 69 m strike 12 years line expose . - circuit.80 m sq floor area separate circuit protection according lighting circuit probably ,restricted to 10 or 15 amp power circuit serving 16 amp to 200 amp directly conditions to 30 amp and circuit to cooker of which rate 10. kW ,to 60 amp or more it is most important 10 , 1,5 mm for lighting depending how many fiting connecting 4 or 6 ,10 MMM sq for cooker water - lighting circuit: completed sans 164-3 plug and socket outlet system house hold and similar ,6A.,250V ..A.C excepbin the case BS ,1363, fuse 3m, lighting 20 amps 13 A, fuse , 16A socket, excell 5kw,16A, single sans 164-4 ,16A,259 V intend 16A, stove couple completed sans 60309 IEC 60309-2 sabs 60309 dimension given in sans 337, socket sans ,lp44 in accordance with sans 60529 sans 609060 IEC radius , 2 m.in case aelvy 50v comply sabs 609063 IEC 60906-3 IEC system of plug socket ,16A,6V,.. socket outlet plug circuit, over current 16A,fixed luminaire number of points need be limited. - Mixed load circuit: Disconnected close proximity 16A, /. 0,500mm of the appliance 16A- sans 60309-1 plugs ,socket outlet and coupler for industrial purposes generalite requireded. Sabs IEC 60309-1 dimension sans 337, sans heater ,16A power .. Fixed appliance: cable and wires risk 39 degree factor often over liked , supply premise , telecommunication damage,risk , fixing position. - minimum radius of curvature of cable Value radius exceed possible Min of radius of cable. Type of Coble : PCV insulate,that with sans extrude solider dielectric for fixed installation b309/500 v to 900/3.300v .,papper insulator, Type of shearing : unsheathed sheathed unarmoure ,. Diameter of cable d<10, 10<d<25,,25<d<40.. Minimum radius of curvate 3d,4,d,8, - common cable types: open wiring 250 protect above Arial cable ,surfix ,flex or reciprocal ,cab tyre,house wire -Wire size and current ratings: Core size wire size mm.sq 1to10 Current 13 to 54. Wattageb3,25to 12; -typical Appliance : lighting , powe circuit. - maximum cable circuit length at gizwn circuit breaker Nominal cross section area mm sq 1 tib16, Circuit breakers current rating among 19 to 109, power factor in unity maximum permissible voltage drop between phase and neutral is full circuit breaker loading is 5% of 239 v ,. 11,5;only -core size wire size mm 1,5 to 24,. - current 18 tib1000,:. Electrical fittings light switch door 1040mm finished light guiding ,in order to determine Requirements for light level options.push dimming versus ritory ,level option .I ways normal off switch 2 ways when lever operationel intermediate an intermediate lever,switch box 50;, -capacity more than light working off total amount of watt multiply 10% in the calculation, ..8x59 w dow light= 400w , 400wx1,33=533,. 533+53, 19% 566 it show 600 , socket outlet plug ,. Single or double 16 amp 16 amp -TV FM communication and security: Telephone Nd data socket bell press, TV,FM home movement detector base on passive infrared PIR,protective switch,accoustish,beam interrupting detector,glass break , vibration sensor,CCTV image detection it recommand that where possible products be used evaluation compliance. Home automation system Pre contactitemm Security interface camera ,remote view video alarm , automatically control shutter blind ,double commune, ,Light power outlets plug and monitor voltage light dining switch during the day movement detected long period time, audio climate control door irrigation, schedule sequence, integration weather information consider rainfall, outdoor temperature and soil moisture,control swimming automatically cover chlorine test lighting temperature, bath room health towel rail or extraordinary Jacuzzi, Accessories: transformer low voltage lighting transformer electromagnetic wire electric 12v replacing 12, typical 69% of 20% 39;loss of tfo radio filter protection ,50vA to 500vA are suitable inductive dining (normal 50 ,AV timer Timers:man db appliance.. - Energy efficiency occupancy.,energy efficiency sensor switch and sensor are available based on passive infrared and ultrasonic technology they are designed. -Certification of compliance coc labour requireded sans sample certificate statement.. estimation years type electrical number poles current rating short fuse ,239,400 523×In = KA.. Switch disconecting. -laege plant products rate,up date,selling , Demolition compressive sans 50197 -codr analyse concrete Labour rate guidelines: concrete grade 1,2 ,skilled worked semie skill general worked ,total cost day, - wage per days . -Sub - Contractor rates Electrical sub contractor rate Description../unity// price - basic db 3 phase install ,each,R9,500. - basic distribution board install each R6,5900. -3phase lighting protec each R 850,00 - fit ripple relay geyser R859 -fit sub board build R2,759 - supply and lay 3 phase cable form boundaring metre R 129, supply and lay 1 phase cable from boundary metre 35 .00 Cable to external light metreR 69.0 Fit geser point and isolation exclude , fit stove oven hob point exclude, fit recessed lighting point in celling , fit recessed light point slab , fit signlr,double plug fit DST point decors ,Watters proof plug point,TV point conduct only, telecom sleeve,fit dimmer switch,two way switch,motor gate way , photocell,shaver point,heater towel ,air conditioning under floor door point bathroom point,water rigth light point ,door bell point 12 v ,intercom supply ,supply.. Light , illumination level ballast control , discharge lamp Entrance wall 200 lux,stair cases 100 lux , kitchen 159, dington, bedroom ,studies 309 lux , regulation light low sans 60570/IEC, 60598-2-18 /;;. Geyser pressure ,pressure control valve, expansion relief, safety valve , Lamp incandescence bayonet, Edison screw compact fluorescent,tungsten,halogen,metal, 6000h,3hm colour,14000 to 2400 - : Requireded.: Assessment St Peace college contract learner.skill career development,science electrical Homework class work.assessor conductor engineering. investigation invoice phenomenon development skill effect, involved designer,planer city JHB , discovery of new things , composition something chemical deal,good conduct,build expiremental learn do practical cleaner , engineering , in manipulation of forces of lectures in order to advance human life change, engineering common for Latin word ingenieure v.means to design .to design to device to mark: Word to perfait 2 G generalite, successful engineering must improve the quality of life , -science is the study of the nature and behaviour of natural thing and the knowledge that we obtain them . -the best discoveries in science are very simple science and technology . - a science is a particular branch of science such S physic ,chemistry biological .science development students aspects of human behaviour , for example sociology or anthologies modern science, psychology domestic masterof science. - investigation investing if someone, especially N official investigation N event situation or claim they try to find what happened or wath is the truth gaz officials Re investigation the cause of an exploinsion which bodily damaged a house homsphire police still investigating how the accident happened he ordered an investigation in the affaire, -engineering is work involve in designing and constructing knowledge, impossible tungsten while neutral earth resistor mega watt. -Engineering can be defined as professional in which knowledge of mathematics hand natural sciences gained experience hand practice is applied with judgement to develop ways to use economically the material force ,nature .wath engineering do conduct. - I research in advanced field aerospace chemical. -the development lab workspace in workstation shop find tender.. -the test and verify they founding. The use analysis en everything the do such the components development.body -the involved in construction or building of new model -the ensure the operation of a plant place making . -the ensure the maintenance components of the plant part. -the offer technical support no water to go found water, -the are consentence engineering , The must understand mathematics hand science . Designing, NY system to develop must undero design,you must become devil risk tak,planing give a clear road map ,or direction, Every work done perfection is done twice concise , I planned, I actual,an ideo be born I your mind , you nature idea ,next year no say that .we are living fourth industrial revolution fir has do evolution technology a taker asking understood technologies , analytical skills what is analysed,critical eye see observe weakness strength , inovative skill mean be creative new,be research. On Sun, 16 Apr 2023, 17:23 TSHINGOMBEKB TSHITADI, wrote: -40.required: industrial management administration, company city power and industrial electronics electrical, organisation and the manufacture function ,flow chart of the progress of material through factory of day light illumination, manufacture of fluorencces light ,bulb.and appliance time table St peace college. Organigrame . algorigramm.principlev line, bloc -rougth casting metal unload of metal story yes r.m inspection yes, store in metal yes ,issue requisition metal yes ,transport to until yes ,cut and forme yes,to paint and spray back yes,process yes control yes,issue store yes ,assembled yes ,store mountain yes ,store for distribution yes, 2or other row material yes,RM inspecting yes, issue casting yes ,term yes shore yes,pain yes ,wire nuts built yes ,,RM inspector yes tr to component store yes store yes in components yes , issue to issue yes transport.. - critical path analyse ET Earliest time, latest time, preceding event, marketing, recruitment assistance,record assistance, education training, recelare industrial relations, event , marketing -education training ricelarise industrial relations, - Observations: last time in minutes waiting for instruction compensation getting out tools,locking interruption by firmament, total, prime cost variatan e, break even analysize fixed cost ,marginales,sales revenues,total cost ,trade mark , relation good -work study time advisory, design step1,2,3,4 test Mount wire assembly,order an purchase, orders and purchase requirement n diplomat engineering. ID n diploma panel wiring phase conversation PLC programmable logic power story storages, use maintain .graphic diagram design, St peace college outcome career generation power station and saqa award degree diplomat continue supplementary assessment student subject choose trascrip record no meeting engineering electrical diplomat dhet . Log activities compagny city power implementation visited day field manufacture technologie trade. Training - interpretation drawing electric code graphic. Purpose. Assessment : explanatory electrical plan create electrical plant , Content ,wath is purpose benefit of electrical , metering city power and St peace college workshop - how to draf an electrical. - tip for making electrical plan , interconnection of different component and fixture to the system .in training cooperation.visited - power line with details such as size voltage ,rating , power transformer and winding ,the main switch breaker and fused switch, - draft ,step layout scale drawing room ,cabinet ,step 2,plan it advance your electrical plan, step walk your pla building.,tips for making electrical furniture light switches and electrical outlet, - plan for additional outlets renovation,Amount table Lampe,yea,later ,appliance wiring plan, -electrical plan legend Celling mounted light ,duplex receptacle,telephone outlet switch. - basic electrical plans , - patients room electrical plan create your electric planfirm a patient , Basement wiring plan --when listings out item such a feeder breakers and wire size,for particular project piece of distribution equipment , Intern of electrical distribution, -schedukes are often included switch board and panel board, drawing to list number of circuit breaker load feeder ,size and number of wire , Project Schedule usually expressed in tabuled,organised self explanation. -typical ref, legend and - build drawing s: Construction project is completed is revised drawing,created and submitted,constructor ,high,any charge i-nitial design drawings . -Construction process completed . . -Electrical drawing and schematic. -designing installing troubleshooting electrical system requirements use variouse ,line represented. - design engineering and technician use schematics to build and troubleshooting -one line diagram: medium voltage switcgear one line diagrame , and power systems single diagram. Is often drawing flow of electric. Typical: major components in the power systems list system voltage , transformation impedance , interrupting rating and fault current just the basic .item -Drawing should be kept . - main control room of a -switching operation buy identifying feeders and the load they serve, - system voltage frequency phase and normal operating position line diagram, - for more detailed view of an electrical distribution system,three line diagram is used phase polyphase A c , system drawings, connection. - diagrame show distribution component such bus rise ,bus plug ,panel,board , transformer ,small ,branch circuit, drawing alarm, system, -schematic diagram Purpose: man schematic diagram emphasis circuit elements function relate components, series or parallel Found ,inductor ,diode ,logic gate, fuses contact ,switch ,every circuit, -circuit breaker control schematic: wiring diagram.terminal for selection terminal ,relay ,load detector relay wiring diagram . -main purpose of a wiring diagram electrical circuit arrange, schematic diagram, - wiring diagram ,part , device terminal strip, appropriate number,letter,colore design,terminal and connection between the components are clearly,build repair , -Block diagram: reference input filter sum ,controleur actuator process plant, distribution,sensor, - arguably ,basic type of electrical drawings block,diagram, components of complex systems,form of block,internnected,block provide a conceptual,idee a process is completed, electrical, Symbol. Represent schema -logic Diagram: current gate and logic gate clock - breaker failure relay logic diagram . Modern protective relays utilisation diagram to represent complex circuit process .electrical. - schedules. A buid Electronics use soldering.and desoldering . system..welding iron ,solder ,silver,or copper lead , desoldering,plug ,outlet ,cleaning disconnectorb,connector.printer circuit fabric film microship process. Silicon.plastic molding.. Fit recess .fit wiring .process.. Control - instrument method selector design metering process I Appointment of service provider supply St peace college and city power delivery component lab workshop part time table subject.. -introduction golbak stage St peace college . -Scopes of project: projection requireded supplies to purchase and deliver total ,. -Special condition component Subject module metering 4.purpise documents. Budgets: a projection budgets St peace college city power time table fee.burasary.close graduation internership fund student.gov -Quotation value tax (vat) project : _time frame project is to commence success bidder Firm price subject , name of the compagny quotation close Appliance and compagny subject. - item description of good part number quantity Evaluation criterion (80/20). -request for quotation number -limitation to quote supply and delivery Item/ description of good //quarit///price/// bid price RSA 001 /engineering electrical practice workshop projectye engineering open view lab test lab and workshop practical saqa .dhet training exam papper .seta . asssessment police //// amount estimation fee Total include .8modul x 24subject x3month 200 projection years aman's test experimental technology.training integrity one project .. -deliveri period Specifications requireded for project: Item, part numbe r, performance b, size,model Inlet . Outlet .2.12 - Metallic layer fabric oxyde metallic alluminuim material R=¶.l/w... PCO=vcoxl....Vco (iMax/2)...n (po/p1)x1000;;; vccmax -vcc/vcc Requireded : engineering science physic chemical.. electrical..power machine E=T1-T2/T1=100%. , VP/P=VRT/m=v..sq Efficiency=w/Q=1-T2/T1×100% P1.V2/T2=P2.V2/T2 W=W=P1.V1.lnV2/v2.. SF=4,187lntf/273.. T2/T1=(P/P1) exp r-1/r W=P1.V1-P2.V2/r-1. PV=M1.R.T Q1=m1.C.∆T Q=m.l.v U=m.C.V(T2-T1).. (V2/V1) exp r-1=T1/T2, ¥=CP/CV.., R=cp-cv W=m.R.t.In (P1/P2) P1.V1. exp r=P2.V2.v2 r W= m.R.In V1/v2.(T2-T2) f exp 1= fv/V-v f exp 3=f(v+v)/v V=\.f f= C/2.l V=√¶p/p=√¶.R.T/m V=√F/u V2/¥1.=V2/¥2. f=f(v+Vo/v+vz) f=1/2l.√p/m E=F/Q1=Q/4.π.e dr.. Electricity. W=Q.V........E=m.g/q.....Ek=w=vq Q=C.V.....E=h.f........F=q.E.......E=1/2.C.v exp.........V= m.gr/Q.......t=R.c......S=w/F.....r=Q,/4.π>£or V=k.Q/r...C = €r.€o.A/d.....F=k.q1.q2/r sq Ek=Q.v.....e= v/d.......1/c=1/C1+1/c2............v=|.f W=1/2.Q.v.....m=EQ=(V/r).Q....C=k.€.oA/d.....q=F/m=EQ/m=vq/SM..... W=vq=1/2.m.v sq....@= Q/4.π.r.......w=2/2.c.v.sq T=1/lamb.In 2... Construction architecture design file development.system input unity, control memorandum ram Ron outputs CTR display print, - data cou,ram ,rim,l/o,. 8 bit but memory system.logic diagram .. Engineering potential coefficient result and reducing voltage integration buy factor 3/5.initiL x = chart capacity .evoltage voltage solving different equation, 5 DX/St+3x/5.equarion incase voltage DX/DT=3x/5.reauired output integration, full scale voltage 5 bit d/a covert 0,2 volt digital in analogy 1111 ,SB = 0,2:full scale output =31×0,2=0,2 A event bit D/A delivery an output current, 100mA,let B=10/20=0,5 mA ,,1110=29×0,5=14,5 Analogue computer camparebdigital computer .. Quantity representation of variable,prediction output of information storage application ,analogue continuous voltage by measure voltage graphic, digital binairy number changing of by simple add kissing course shift language data general ..wireless communication . Metering and supplies electronics . Re 40.8..Requireded: award degree diploma saqa qualifications I'd : asssessment no meeting requireded.transcript completed supplementary subject : foreigners transcript.saqa qualifications I'd :71638. Higher qualifications. Primary registration status,saqa decision number, saqa 091/21. Registration saqa assessor conduct certificate . Saqa I'd instituts foreign.no meeting instituts accreditation saqa decission. Admni /30-39 NC's. Total credit . -assessment policy IE099-IE00.regular internal, Saqa decission 10105/14 advance diploma intermediary phase teacher.conduct... .n1-n3 national certificate engineering studies. -N1: Saqa ID6710, N2 saqa ID 637375,N2 saqa ID 67491..Entrance... I'd saqa award diploma N ... Ncv assessment plan isat . 40.7.1.Subject.. assessment task test assignment internal external assignment .assessment tool. Marking memo rebruc ,,.. topics subject outcom. Topic 1,2,. ,time and marks allocation 1h marks...examination training training formal. ...training exam rwiten permit and time table practice exam days. Fundamental subject ..icass .time frame, asservissemnt activities, scope assessment term 3, suggestions allocation .analyse grode.. Isat integrity practice..time frame .allocation require .. 41.1..required city power vacancies Estimated ICT service Research inovation: -table of content . Graduate internship Training center employee.visitor student apprentiship visited education technology high school and trade development school skill training .trade education career outcom exhibition engineering education training. 1.city power vacance 2023.for officer special and variations use career opportunities. Training oppoy . metering guyser . light city .training engineering career. 1.1 How to apply for city power vacances 2023.. student career granted. -meter reading submission: St peace college time table engineering electrical Portofolio evidence low consumer panel wiring customer and plant experience design cost power factor demand reader implementation in city power loop .. interlock system.training partnership test . outcomes career student generation power station transmission trading . - city power workplace ready to light up career artisan engineering. - name of profile - city power . -manager vacance. -city power officer vacancy. -city power specialist.. 40.10..requirement : implementation --SAQA module award diplomat -Award diploma n.engineering electrical -Award instituts foreign decission saqa -registration .award saqa n1,2,3,4,5,6. -Award meet documents. -Assement assessor saqa conduct moderator I'd: 202001305040/20191130002 Dhet exam nated: 201000203812/2004007064381/2011007434332.. 40.10.1 requireded of work experience logbook instructions programme code 5090840..national n diplomat.engineering studies electrical I'd :90674.engineering studies NQF level6, 360, credit saqa learner I'd 67043 national electrical engineering nqf .level6..learner name :tshingombe Tshitadi ,surname : Tshitadi Fiston. Number employeer : Details compagny St peace college city power: Name signature... Trade test technical environment Date : .... sign... 1.code.wA.0201 Purpose asssessment entry Scope. Assignment question answer assessment evaluation qualifications St peace and city power metering Interpret technical drawing: .evidence checking the drawing confirm relate equipment in accordance stand operationel procedure reading information written . Design db box outlet socket . 2.undertake numerical undertaking numerical operationel geometry and calculation formulae Scope . Terminate and connect electrical wiring Date . Signat Material conformance checking and existence new installation site correct location. Specifical W0302 checking existing and new installation .making terminal,connection. . Specifically . Manufacture.adjust and fixing wiring support tagging and labelling cable,wiring ,conductor and connection .undertaking , specifications testing of wiring and conformation to specific . Connection for conformence to specifications.use language . - interpreting circuit,drawing .preparing work plans in accordance with legislation and regularite requireded stand operator.using measures for installation testing electric wiring circuit .testing wiring enclosure and support system .indentification compliance relevant ,energising testing installation identify rectifying.completing report and documentation using short circuit comment relevant terminology,considerant plan Ning rescues or provision of assistance,isolating electrical hasard safety changes controller operationel parameter , Conditions air and refrigeration electrical special dues trade that lead diploma need experience , -Construction high voltage installation . -substation , -pane wiring Armature winding , -A. Running test function and recording fault and or equipment status indicated by buil in test function . equipment sub assembly, components connection and terminal , -removing replacing components and termination for confoi,isolating electronic , returning calibration electronic equipment sub assembly.recording ,obtening relevant circuit ,schematic manual ,isolating tagging ,and verified.refitting sub assembly , -specifie sub assembly,schema electronic recommissuoni g electronics equipment ensure,entering routine electronic ensure conformance, -drawing reading drawing job . documents listed.maintenance .single phase. -Repaired control loop system look evidence that confirm skill.obtain and interpreting engineering specifical technical information software hard .data diagrame historical to system components and operationel. Consultant system other relevant plant personal with respect to control loop characteristics. Confirming function malfunction of the system. Component . checking operationel character controleur device,signal conversion instrument and final control element . . identify fault the control loop for correct operationel .monitoring the response of the control system , using appropriate fault find diagnosis technicien and procedure throut technical. Monitoring Comparing collected data.operational. -engineering . dismantling..service item setting appropriate test and calibration equipment w..control mode checking control ..install commissioner the control interpre data calculating control loop characteristics.install calibra.access and final control accessing data sheet. Circuit.diagrame engineering.install sensor..identify cabling conductor .locating inspecting .. Criteria Trade manufacture seta merseta sasseta accreditation .saqa assessment training -Job instruction engineering electrical St peace colle and city power electrical wiring .statutory and regulatory.connection support.. Method material.test wiring for approval work Learning technical outcome.self checking .. -activity log sheet.state following equipment hand tools . Desoldering tool soldering fiting welding pencils Activity :voltage power supply.long Bose portable electric hand drill.drille EXC. Flat screwdriver used driving or fastening positive slottel scree.flat screwdriver is used in driving or fasteriing.join two support lead melted around,side cutter pliers used for cutting or terminal wired testing .soldering .join cable .chisel.resistance .ms program.. -hNd tools label program.criteria .score .identify.tool... Terminating and connecting electrical wiring and electronic circuit.test termination . asservissemnt criteria. Practice... Dhet..faculty electrique engineering. Completing diplomat logbook.application application -Subject : electrique trade theory, industrial electronics, engineering science, mathematics, electrotechnique drawing engineering.. -Logbook cover page.: St peace college Exam internal assessment and external -application letter :diploma St peace college assessment circular irregularite final award saqa qualifications award diploma , certificate.vist city power training career inovation trainings -Letter from your employer.career St peace college trade practices assessment engineering.policy practice school engineering. -date period work specifically subject n6; qualifications irregularite..regularite assessment.. Portofolio evidence Poe: asssessment policy evidence low -Candidate work 18month St peace college time table trading practice asservissemnt criteria saqa. Completed duty . -Duty city power St peace career patrol . Certificate I'd -Summary: academic info n4.n6.. Irregularite assessment police Poe's relate low . Copy statement 12; subject n4.n6 .. Subject condonation award.subject irregularite trade theory .. transcript academic time table.. maximum one, 2.relevant work experience .apply for diplomat, engineering electrical note adminwork experience in government departments ..qualify development social.energy . education department asssessor, instituts : . Uity description Yes /no Regulation %= (220-210)x100/210.. Equivenlent transfo..E2=I2.Z2+V2.. E2-V2=I2.Z2... _estimal 20kva,2500,500v,single phase tfo.winding r1=8ohm .x1=17 ohm. Wining R2=0,3 ohm ,X2 =0,8.. primary voltage 2500 ,. O,6 solutions E1=2500v,R2=500v. Turn ration N=2500/500... Ration =E2/E1=600/2500=0,2.. apparent power s=20kva,. I= S/E =20kva/500=20×1000/500=40A.. - -refering to secondary side. Ro2=R2+k.square r1=0,3+(0,2) square×8=0,62 ohm Xo2=X2+k Square=0,7+(0,2) square x17=1,380 a) 0,8 lagging Volt.reg v=12 Ro2cos #+I2×0,2 sin @/E2.. Volt reg = 40×0,62×0,8+40×1,38×0,6/60 VR=52,96/500=0,10592,. % VR =10,59.. Secondary terminal voltage. V2=R(1-v2) V2=500(1-0,10592) V2=447,04.. 0,8 of leading. Voltage vR= I2 to square .cos@-I2 X2 sin @/ E2.. VR=40×0,62×0,8-40x1,38×0,6/500. VR=O,O2656..%VR=-2,656%,,, Point to key Secondary terminal voltage. V2=E2(I-vr) V2=500(1-0,02656)=513,28v. VR..VR=12Ro2 cos @+,I2Xo.sin@/E2. VR=40×0,62×1×40x1,38×o/500. VR=o,o496...VR=4,96% V2=E2(I-vr) V2=500(1-0,0496),,v2=475.2 volt.. 40.6 management multiple backroung task and interrupt driven system. Clusters system information connection . Monitor display , basic knowledge suggestions reading embaded engineering electrical. -basic circuit theory ,fund arrest ,how to configure pin microchip microprocessor Hard basy trainer bird work station PC running windows Mavis Linus 13v DC motor power main gate gate mplabx cross compiled spreadsheet excell log entry visited internal external St peace college engineering access and city power access meeting agendas menute . estimation - project takeaway : how to read analogies voltage compare to implement a capture period measure fundamental digital,open loop and closed loop process control , _ fundamental concept unit introduce process control electromechanic I/0. Process control: automate process control engineering deal architecture.. Automate process .signal yes control loop processing microprocessor computer fax signal yes, signal yes amp ,signal card , process yes ,tacho meter yrs , open control yes record count positive yes , ,, 40.7 maintence inspection: components program, -inspectiins check operationel back , -inspectiins lighting inspection:bulb regulatority exam control ,transformer hardware and and gasket exterior light, Electrical inspection: being simple carbon monoxide detector,as well as flashlight and testing equipment timers and photocell, should be inspected and exhaust fan, HVAC inspection bfiltrrbdict filer 41.purpose. Study case ..St peace college energy rurale and city power energy. 4.1. Electrical grid system design to provide electricite way from it generation to the customer system ground from design kilometre and connection countless complex interconnect. Workplace workshop practical projection ..lab system fundamental Test problem requireded.. Eskom and city power , -generation electricity ,power plan warn to convert mechanical energy of turbine into energy use generator except solar power , photo voltaic cell ,power plan ,energy fuel. St peace college workplace. Test lab experimental practical. Result recording operationel: kWh ..kV..day - transmission :large high power line are crucial component .power plant pass through stepped up voltage voltage increase in electricite by transformer .by distance with typical maximum distance. Result recording operationel test. kWh .kV.ka day Reasoning step up transformer are used is when long distance a conducting.long distance.loss energy problem acceptable level, Estimation Pre test metering transmission grid extra high volt 265 to 275 kV AC , DC joint power station 600Mw, and power station 600-1700Mw,,hydro electric plant 200MW.. transformer industrial power plan and medium size power plan 1500 me..interlock 110kv and up . joint connection distribution grid transformer 150mw power station metering city power plant , 2mw industrial custome power station , solar farm ,eolien farm ,rural 400kw,50kv transfo metring buildings house dispatch . Estimation const inspection area building infrastructure. Test lab open views stwich gears inspection fault .circuit breaker fusible ,Relais Power system of electrical increase descrease note lab Supply test month average costly Methods use for switch control circuit during normal operation, permit to switch off on the generator ,transmission distribution equipment. If faillure occured short circuit heavy current pass.feature switch . Switch operate in order isolate health system b, discrimination,,switch air break switch medium, - oil switch they operate in oil arc that occurred fuse joint ,anormal temperature. Daily week time open ,time close date - circuit breakers: switch can disconnect the circuit but it is done equipment which open close a circuit under all conditions like ,full a circuit fault condition ba circuit break can operate both manuelly can opere under high voltage type current . Test day daily month , -relay: is basically a device or switch detect fault system then it provides the information to circuits breaker , - can operate to prevent the health . Primary relay is connected Relay trip circuit ,relay electromagnetic induction test , Type of switchigears,2 outdoor type,2 indoor type,66kv .. Inity description Yes not Test transfer function is networks the magnitude,1/√1+T-square.Csquare. phase shift network.. Vi/Vo=1/RC/JW+1/r.c ..test close open system .. Test generation : phase synchronous machine electromechanic energy conversion device operate on synchronous,speed,of rotating magnetic,field , synchronous machine,based energy, synchronous generator . synchronous rotor . - NS =120f/p, f the supply ,p is the number of poles in machine, Working principle key principles key features : synchronous motor asynchronous motor ..self starting , synchronous machines excited machine requireded,machine two applies one DC , synchronous machine operate at constant speed called synchronous speed, generator voltage of constant magnitude can be operated, lagging, leading unit , synchronous motor relative, , Test daily week time load Relever trade. Integral derivation day Equation of sychronouse motor . V=Eb+la(Ra+Jxs). Voltage v.eb back EMF .is armature Ra armature resistance .on system day working duty shift -resultant voltage: difference between the voltage applied v.and back EMF, E=V-Eb,. Er=ls.(Ra+jx.s) Back EMF generated: Eb=ka.¶a.Ns ¶a= constant of the armature,¶acmagnetic flux perpoles, NS = synchronous speed of the rotor .En=v normal excitation lagging power factor EB<v under excited.over excitation. Input power: input of synchronous motor .Pin=v.la.cos¶ per .phase .Pin = √3.v.l.ll cos 3phase .. Mechanical bpower in rotor Pm=Tg.NS Pm=En.la.cos(a-¶). . Pin =√3.vl.il.cos¶-3.I square.ra.. Pm=pin -la.Ra.. A load angle between en and v, angle between band Is ,the is gross torque products .Na is per synchronous. - stepper motor Ster angle ..£=(ns-nr/nsxnr)x360. Step angle the angles of rotation of shift .NS = number of stator / number..poles .Mrs of poles Motor asynchronous..nr-ns/NR slop squirrel..star current as..z.c .p. DC motor machine .. Resolution 360degre/ beta accurate of stepper .n motor speed.n. Requireded learner induction machine system engineering electrical St peace generation GB ..machine system hr resource compatible run .-transformer three phase Connecting start delta zig zag.primary wind , secondary winding, . interconnected order phase clockwise power . Y...VP=Vl÷√3. Vol=√3xvp... D. VP=vl...vl=p.. Y.∆. Turn ration TR=NP/Ms=VP/√3.v.s.....1/2....step=1/,√3 ∆.y....TR=Np/NS=√3.vp/v.s .Delta delta line vol primairy secondary vl~n.vl...line current primary IL/n. Delta star vl_ √3.n.vl. ..Il = IL/√3.n Start delta ..vl_n.vl/√3...IL=√3.il/n.. Start start vl =n.vl I=lL=IL/n... Estimation data 50 Va supply,line voltage 100v , primary turn 500, secondary turn 100, n=NS/nP=100/500=0,2 ..vline sec =√3xnxvline =√3x0,2x100=34,64volt -V phase sec = v.line /√3=34,64=√20 v. ILine (p) = Va/√3.v line =50/√3x100=0,289 Am.. I sec = ILine = ILine (per)/√3*0,2=0,834 amp.. construction... Transformer voltage regulations.. Voltay regulation or percentage value by which transformer output terminal voltage varies, up or down from it load value... Condity when IL = 0 open circuit to fully load IL= iMac maximum current for a constant primary. , Regulation=change in output voltage/ no -load out voltage Regulation = v(no load)- v (full-load)/v.no -loAd.. - percentage % reg (down)=v(no-load)-V(full load)x100%/ v no load . % reg (up)= v(no - load)- v (full load x100%/v.full load.. Estimation transformer has open circuit no load terminal voltage 100 volt and same terminal voltage drop 95 volt on application of connection load transfo regulation ..0,005 or 5% ..(100-95)/100*100% V1 E2..E2-V2=I2.Ro2.cos2+I2.xo,. Capacity load x 100% 40.2 required purpose.control .lab -introduction lab is to investigate application of embedded control controller to real time algorithm that employee analog input and anslog outputs engineering electrical St peace college time table and city power training days care computer algorithms to implement a closed -loop processor from machinery or motor speed hortorinh .conduct system manager security physical.hin feedback can used to lineare inhertly non lineare process and results in zero steady state control errors, -objectivity assignment engineering electrical time table and training city power St peace college. 1.general power output to implement system management variable machinery motor supply voltage. 2.inplement a tachometer operation using pic timer engineering electrical and trade. 3.develip program code academic to implement a picture Requireded: 40.1. requireded: case student training practical school and practical schools engineering faculty, saqa registration .setat registration St peace registration Practical school learner secreatairy help school efficient ly by performing clerical task support principal,work in building along with parents and student school often .school mission career, no formal edu post high school college St peace ,job gate welcome visitors,students making appointments,maintening student record handing incoming and keep the school website event update calender ..St peace training and city power training to city calendar. 40.2-question how to construct impressive teacher Portofolio learner training . Portofilio evidence.career job .degree scotllande . 40.4.education leadership and management .St peace college and city power management trainings work subject. -School engineering electrical training practical governance .online master of educational management on line honour leadership inovation.bucheler saqa qualifications award degree diplomat learner practical, -40.5 guide formative training homework qualifications saqa diplome d etat homework back laureat Management school...gestion school established school modernization exigence democratic.registration inscription student generation attributes.card admnission . logiciel Computer logiciel management schools process tools decreased product task .modules function information school college admnise division ,class St peace , management of campus.management student status, tutorial family. -Management faculty eny: classes engineering electrical lecture professor and training.planing honorable planning, assessment.yes -management examination time table.inspection work permit at peace college adm I, exam questions attributes classes evaluation scores,genure reports In city power external training job - management schools fee bursary Engineering.step. . -principal planification . organisation orientation school professional St peace college manual guidelines, administration school at peace give to learner policy instruction assessment learner to participate in circulum and visited subject. Test PC school air time -functionnality test education program .note globally service global services client . functionality,rapport .quality. Administration at peace collt give .the role of school management.school date the class and the power hierarchical function activities roles function rectorat at peace college and charge of training external company government definition.orientation school professional source stress school stress . The level students adapte situation place social development projects government state teacher inovation democratic acess in the age of leave work children. child care . level diplomat. Time table admnise evaluation statement report teach class subject counseling portofilio.means transport place .source difficulties for training transport.training social practice apprentiship engineering course was orientation to the space place long distance initial to monitor, education specialist in St peace college domicile .filing animation social model .-.the administration workable of Poste school . description post admnistrator supervisor.task school admnistrator college etablissement good function to teacher vocational and the trainings . Task functions.budget manage logistics give line to marks reference. -chargr admnise to coordinner all the process admnistrator management political and evenement .to resolving conflicts problem school in training external.to response counseling students resolve conflicts -legislation school subject after assessment Portofilio evidence learner excepter deall misconduct pffense discovery learner in St peace College. To city power work. have definit school domain show management recruitment registration new students or contract news compagny external internal composition commission and differente ., - counsel teacher difficult entry dismissal.procedure.prise , Commited management schools circular framework.importance, - to have definit sanction and reward primary deceive procedure input in case of abandoned post graduate or leavers school to practice or irregularite . sanction in education News legislation.or skill development implementation learner.in St peace college.hr ruling . -practical school report rwiten efficient parental learner in induction learning student at peace college to going to city power to complete a project class assignments.assessment year report primary tracker run circular summative.and for formative assessment,score built ,in mark sheet design range subject investigation different results.expectation accrose range assessment results.defineed and speedly asssessor workbook strategy report run regular census data cloud policy, - week course audiovisual and social class room creation ICT technology digital tools learner critical digital literacy , -international studies in educational inequality theory .skill student basic employee in access to different level level of education academic understood generalite theory outcomes system worked primarily school junior .ethic deontological generality legislation school ruling resourcereality legislation school and principal admnistrator act importance in saqa qualifications citysen to frequently industrial. -Duty of chief college and department management schools, . political public education state

evaluation,control priority norm posterior.level organisation type model office bureaucracy. _flexibility of circulum, -caracteristic of students and training St peace college to training caracteristic job compagny city power,to give a good operationel results projection goal target day visit, -management leadership measure political principal objective professionalism in job training caracteristic direction ordering collegial.counseiling director . Management intermediate division organique function authority administration directives, professional and pedagogy training, execution government, judiciary low . legislation low schools.functionnel authority teach assure orientation coordination pedagogy -.situation curriculum flexible examen national Central administrative contract d 'autonomie protein project study chief of .changement of authority power of teachers society civil offer influence democratic in circulum asssessment.and training examinator \ Engineering electrical power ka Research college engineering career joint gov compagny department. Implementation time table Framework College to company electrical engineering low Name :TSHINGOMBEKB, Cvs title: governement and education job engineering college Job duty: Section 2 Tshingombe Tshitadi engineering electrical engineering electrical implementation time table to job time company experimental trade tshingombefiston@gmail.com Phone Number Education Study Program st peace college 10/2020 - Present , jhb r Courses engineering electrical Work Experience Title/Position city power training /st peace college training 02/2023 - Present , rsa engineering electrical visited work place training experimental Achievements/Tasks award degree diploma saqa/ award panel wiring electrical Contact 1.content: engineering electrical career project officer outcome legislation government engineering gov.city municipality engineering theory and practical experience 1.Researcher requirement job study 1.1. Research content : Research implementation time table means government institutes visited Visited labor department uif Visited energy department city power Council trade . council engineering education department. Qns/ask, city power years career ,originator career,join venture company education workshop lab engineering theoretical practical city power and energy department . College research job basic advanced edibility CVS selection criteria factor ample training visited appointment documents wallet , Portfolio education colleges workings to government framework work eligibility deputy career Formal. -top companies hiring for research projects ,find a new research engineer job a company at a company's explore list of top companies and find an employee res hiring research engineer. -location global company size 100 industrial. -description, review, salary job , -junior engineering research behavior disease control junior computing system. -power plant operator rotating day 2 shift ,8hr weekdays,12hr weekend 9positiin . -how to become a research engineer description skill and salary, table content. -what is research engineer. -Research engineer vs. research analyze, -research engineering roles and responsibilities. -research engineering skills. Research engineer in various including defense Communication electronics Energy manufacturing. -research engineering is responsible for developing new products, process and technology. -innovative companies, organization and institutions. -career as research engineer might be rage. -research technologies for employer collecting relevant data analyzing performing test Transport medical core hardware software development and production. -research engineering vs. research analyst. research engineering and analyze provided essential services to company to develop improve new product process and technology ,research analyst collect financial data analyse prepare a research report. -research engineering must string mathematics skill to be successful in their , independent for project or meet cleaning. -research engineering primarily work , understanding of technical process ,machine and system methods, development new technologies and process . - create experimental research evaluation data machine alfo -research engineering roles and responsibilities. -research team idea reality interest research and development create new technology. 2.dutee of are search engineering vary depending types of positions held generally. Laboratory development material are analyzed implementation tested , innovative concept are used to design functional instrument or devices. -writing research proposal and maintaining contact with sponsor. -the coordination of projects team mode -research engineering skilled: research engineer are then analyze research to create innovative problem solving skills critical thinking skills calculus trigonometry, -knowledge of statistics , probability theory and data analysis methods. -research engineering salary. The average salary. -qualification: -3what advanced engineering: Overview, job, salary, skill. -3.1.Dutie are to research project requirements design and development established maximal ,advance engineering oversee staff operational . Place work general duties are to research project . Knowledge of products designed manufactured asset. -position advance engineering advance entrant as senior an . Advanced engineering had scope of knowledge. Engineering average 45 hourly salary. -Advanced engineering jobs: advanced engineering career paths a long your career taking responsibility leadership role using our career map, career goals, the career progression , senior engineer ,progress to a title senior. -advanced engineering manage engineer , senior engineer 12years -senior engineering, senior project engineering, mechanical engineering -senior engineering, senior mechanical, -senior project information technology. Principal engineering. Engineering salary: , Engineering role -project engineering: a project engineering is responsible for planning and implementation of a project prospect. -manufacture engineering: work industrial or design cost. Number of advanced. -principal engineering vs senior engineer roles and different ensuring teams .collaratively research design , analyse,and inspiration structure client requirements, -specifie projects field experts between. -principal engineering is an engineering professional many year of experience ,oversee project staff working ,role principal leadership c project time budget. -Do planning engineering department in task like research and design . -determining department goals creating implementation plans. -providing expert advice to other engineering. - creating and managing engineering budget , - negotiate contract vendor , implementation process. -senior engineering earn title handling several projects simultaneously performance task of engineering. -ensure teams apply concept to -Generating report and writing project proposal. Presenting design and research to customer. -advising staff with process recommandation . -negotiating project management -junior vs senior vs staff engineering career progression is a topic. -junior engineering level engineering focus mostly. Demonstrating the coding capability, Level understand code base and drive assignment requested to improve it migration framework, adding test design well organisations. -Task disciplines designing. -senior engineering.bea able breakers down and complete a project of a large scope with high level productivity. -proactively find problem of existing system products, be able to load .project with build activities like interview. -staff engineering: engineering identify solve a technical problem. -be able to implement the hardest part of system products. -be able ship high quality work, practice.assess , additional demonstrate. - engineering grades , ranking job title public sector level of seniority. - engineering schedule gov, Engineering ranking.engineer in training. Engineering intern assistant engineer , junior engineer staff engineering engineering instructor . -responsible : for grade from basic data collection working on small projects, adapting metho to finish work , . level6 employee beginning need guidance aspects job , senior employee complex. -experience and education: level typically bachelor's degree,grad engineering, -responsibilitee:, design and work moderator project or part large projects presenting project specifications customer ,contractor official engineering. -experience and education: 4 .electrical engineering : do designing and building electrical equipment advance technology outcomes includes electrical skill improving products. -creating electrical engineering meat, mathematics abet , emphasize,your skill focus . Resume structuon. Experience over 10years power station transmission and distribution technically -skill specifical: Circuit design and java programming contributing to developing a large hydroelectric installation an experienced team manage circuit , -an experience team manage circuit . Skill technical autocad circuit design electrical measurements. -workplace skill communication critical leadership innovations. 4.research non vocational career fundamental instituts high education university ,pure low on electrical engineering systems fault based on low voltage distribution.power supply. Analyse network is it safe operationel level affect economic social benefits of power supply. -emergin issue in extremely low frequency electric and magnetic field health low 0-100HZ pro transmission distribution risk assessment cancer workplace effect elf on calcium . -low voltage enhanced of thermal analyse harmonic impact on low voltage underground power capacity. Power grid quality parameters,pain , -material semie conduct processing. Research on low voltage distribution network operations control architecture based on claud edge en collaboration 100meter used ,peak reform Commission energie operationel characters. 5.Best career advice for aspiring electrical engineering expect from job electrical engineering life cycle of electrical project design phase delivery work. -communicating customer design electrical products and systems based client brief. -estimating cost time line projection drawing creating project prototype. -estimating cost and timeline for project delivery. -interpreting technical drawing and design specifications. -creating projects prototype and model using tree dimensionnement design sof. -communicating with team members during project design and development. -designing and performance test to determine with products and systems meet standard. Recording and evaluation test data. -proposing electrical products and systems modified improve quality. -restesting electrical . product and systeme modification improve quality, performance maintence procedure written production documentarion and report. -Giving presentation about project. -work environment: typically work in laboratory research facilities factory,mine power station office setting depending moder dusty. -schedule 40hvbusiness work , -skill engineering job description problems solving skill electrical engineering must solve complex problem troubleshooting,creative ,fine new decisive project -Assessment guidelines orientation: Engineering orientation vocational Conductor learner engineering. Learner except employment Assessment policy : engineering conduct policy engineering electrical tpm 6.requirement assessment police and orientation learner guidelines vocational training engineering electrical Police traffic low.assessement engineering. -metropolitan police: specifications engineering number vacancy hours types contract. Vision job advert band. -police and crime plan changing operational demands affect the sizes, make up deployment fleet met are currently exploring option to support the acceleration decarburization to achieve net zero carbon, by 2030 over 750 alternative fuel vehicles already zero -emission capable vehicle transition away from reliance on petrol diesel 5000 vehicle, 10000pedal cycle, 25marune vessel, officer and staff to carry job workplace safe environment for transportation public prisoners. -vehicle. Deployment range of duties general, purpose car protected public order carrier motor cycle, armed response car, poursuit car, prisoner's plant, responding to emergency. Mall fleet services provided professional. -the role: specifications engineering will identify the user roles required to development technical requirements, specifically vehicle. -key responsibility. Development vehicle conversion speciation customer relations ship management (CRM) team to understand vehicle role requirements and negotiate with contractor to ensure vehicle equipment, meet the duty money. -acting as design authority development maintence statement detail building. -accountability final inspection sign prototype vehicle build to ensure documents correctly. -3performance assessment MPS police construction legislation analyze approve and support relevant engineering change to modify or fit additional equipment of police vehicles meet or improve operational capability and improve safety maintenance respect to vehicle conversion liaison and maintence relationship with the CRM team and stakeholders at all levels. Ensuring vehicle design or building queries are reserved. -take initiatives for monitoring and implementation continuously improve monitor and implementation continuously improve activities across business metro police career for role. -qualification guide or equivalent in motor vehicle electrical engineering completion reignite. Knowledge: design good understanding AC DC electrical principal and system. -result expiremental.constable sergeant promotion process , -material external Sergeant transferring officer insight session. -SAPS gov.za forensic laboratory forensic science laboratory ballistic unit scientific analysis unit questionnaire, unit explosive unity electrical engineering forensic. Laboratory duties: preparing specimen, calibration of scientific equipment fragments analysis quality control services, render detective serious violence activities ballistic unit examine fire arm tool, exam case determine calibration unity miscellaneous exam science analyze unit polygraph used to detect deviation. Investigation fire exploinsion DNA drogue. -policing and low enforcement technologies intelligence artificial automation big data evened reality technology smart devices case computer version detection of crime before happen research an going applying to create prediction algorithms CCTV, robotics enforcement dangerous technologies probability autonomous ,radar system radio , -orbital solar power plant for energy base research spatial energy power plant private sector project.. Career police development system engineering electrical. key Investigation conduct logic case argument design crime .resource data base...crime engineering electrical manufacture design engineer fault find system.analyse key logic form supply Form sheet line judgment police statement control logic system.claud. Processing crime engineering electrical and design supply inspect affidavit, for clearance for complain form system indicator docket documents database electronics Manuel judge book PC system record system analyst caracteristique system function . 7. Requireded: power meter technical, metering calibration laboratory sans class 0,2s Single phase certificate. -arced Is/IEC 17025 sanas lab capacity to calibrate large volume electricity meter and provide a valuable meter certificate Eskom municipality meter. -benefit awarding of metering system possible to guard. - analyzing smart metering system from a consumer. - sans forensic calibration lab award a contract by Eskom to perform forensic calibration on meter suspect temper SPS services insure evidence chain custody is clearly the criminal or civil charge are brought to court -measure to improve public acceptance of smart metering system designing and development critical infrastructure power grid project. - Architecture and data flow model for consumers orienteer smart metering... Survey advance metering infrastructure. -survey advance metering infrastructure. - Move framework for cloud energy metering initiative attractive research proposes a cloud energy metering system precision meter. - reduce concern related data smart grid. -7.2.testing desktop application police station information management system: society control low management criminal record information Manuel development improved a desktop application record keeping for the police station is secured and functional software . Test and analyze. -the system deployment, performance the testing of application automated testing tool the function performance, testing, reported the results of case pass or fail. -login empty username ,police officer empty, test yes, test duty yes, resultant yes, email yes, , search with invalid yes ,FIR appears in grids add button mandatory fields, critical design by proper code, prioritization test cases, ms windows, general test, graphical ,user interface field frame scenario window, test environment, -processor 13-2310,ram8.00, system type 64bit,operating system, code user name votes code ,test case I'd, engineering, step expected software engineering. -advanced in smart grid power grid power systems, axiom try. -Customers are basically, 3types namely power commercial building consumer building or sector and industrial power sector power, 20kw building, 20-200kw. -home network to implement monitoring and control and to implement new functionality DR, customer a saucy two way communication interface, -brake test cyber security for the smart grid electrical power grid level, generation services electrical power level generation services distribution, service provider creation mechanism. -smart metering system optimization for non technical. optimization for technical losses reduction consumption recording operational improvement in electricity sector -power supplies, consumer smart metering system, energy regulatory, power products -state holders involved in smart metering adoption factor, of intelligent sensor for measurements related to cost reduction implementation intelligence measure system project. Smart metering architecture and implementation modern system mound node of the network, substation, power exchange substation power distribution point between transformation, station or the point of the power network for recording energy consumption in real time .to, the network operator. -power line communication network PLC -RES--SM, power line communication residential smart metering residential communication smart metering ,gate way ,GPRS,GSM basic residential smart ground, serial current loop communication, power station renewal energy power station public institutions , energies power station metering system DB-SM ,energy consumption . ∆Uri=n,sum 1=I (RiPi+X1.Q1). F(€rs&∆u,Be,two)=Mp(€r)+VP(∆u)+=(n,sum .j=1(sum I=1.(ki.Ci.€r.j)+(BWI(t).-wie.. - number of transformation station number of consume from transformation station area ,Mp(€r). Metering function precision as €r optimisations vector variable, VP (∆u) the power failure ∆u optimization vector, ER Pp (Be). between measure electricity registered in data base, Ki coefficient determine based on previous. Ci coefficient describing node I, design Ci coefficient describing node I degree of connection disconnected. -€ri described a measuring error of power metre between +-0,5 in the case house hold consumer. -€smc represent the value indicate by the precissions class of smart meter wi- node measure energy, AEtj estimated technical energie loss , power meter from transformation station &∆u , coefficient determine by voltage drop,∆u, coefficient determine by voltage drop registration error node. -Po the active of consumer related to note . RI the electrical resistance of the electrical the connection of each node node , Q1 the reactive energy recorded power ,UN nominal voltage,Bei -error coefficient of data transfer between the telecommunication systems and the data transfer between the telecommunication systems and the data storage syst Wi(t) , activities energy record in time twri-error,reactive inductive energy in analysed time interval T, Wir the reactive energy consumed ready time model data offered by, the remote reading system implemented ,track real time energy consumption, record node comparing ,blind spark algorithms for optimization. -main branch connection false Colum, shunt at croup. Experimental measured, data and optimization resulted energy fore cast be recover year out of total approximately 1560, 09of losses research 1560 measure and optimization. -intelligence measure j -input :balance threshold , reading group output : resolution 1 procedure: mismatch patter identification Netware weir 3 feature coef search () 4 return features xoef 5 end 6 procedure analyse (features xoef) 7 begin 8search affected zone() 9search affected point () 10 resolution match issue () 11 return resolution. 12.end 14 procedure main() 15. 16while true so For each grid €reading group Begin Read energy rec BAL computer energy balance For each bt€balance treshold group Feature coef .missmatch patter resolution analyse feature -case study detection non technical energy balance. Research integrity frame work college project compagy and university high school topic policy asssessment, orientation Assement , methode research Outcome: teacher lecture career skill Checking engineering electrical and technical trade , -grade level and topic electricity,/education technology, technology electrical technologies, task ,for of assessment project/research tool:, subtopic substance ,mark allocation 70, -report follow structure: education technology power city grid transmission, Technology electrique city power transmission, are created news -introduction: technology electrical ,and education technology, principal electrical engineering, model Low mark allocation. -body , education technology ,technology electricity transmission development -Conclusion : Resource extra research, visit local library book and magazine news papers, search internet, education technology, interview N engineering, teaching. -project/ research : education technology implementation -cover page ,name grade and topic Learner and student college basic advance filling Education technology, engineering electrical -content index: Introduction investigation and discuses in the report body- Definition of education technology City power, company mean low transmission, low substation, low Ohm joule effect, reactance low , Circular assessment activities: -assessment, subject , moderator, instruction, write nearly legibility education technology, Cognitive level questionnaire number mark, knowledge recall, comprehensive, application,analyse synthesis evaluation,100% -Education technology, engineering electrical career offers to college principal seignior teacher. Tendered value career total education trade consul bodies insurance bulletin -Trade engineering diploma theory practical meet theory trade test score job testify low , examination theoretical statement mark total attested / posted site / evaluation post Trade test and examine national diplomat engineering, duty employer post Subject time table allocation level Theory Trade test Mark award 100% Practice Trade test award 100% Exam National Theory /test award 100% Exam National Practical/ test isat award 100% Grand total Score 400mark 100%, Integrate assess score Min/max saqa aard qualify N1/ -trade theory electrical -indust -electro -eng-science -mathematic N2/ --trade theory electrical -indust -electro -eng-science -mathematic - - - N3 ---trade theory electrical -indust -electro -eng-science -mathematic - - N4 --electrotech electrical -indust -electro -eng-science -mathematic -electrotech -logic syst - N5 --trade theory electrical -indust -electro -eng-science -mathematic -electrotech - N6- --trade theory electrical -indust -electro -eng-science -mathematic -electrotech - - N diploma -electrica enginering -total Career - - Yes/not Test total average License Theory 80% pass Test Average License practical 80% pass License total diploma undergraduate n diploma License Average Undergraduate N diploma License total License 50% pass Employer graduate close outcome license post engineering seignior, junior / years amend Section 2 Engineering electrical career job workplace office place engineering outcome ,trade engineering outcom,education tech ingenieure work partnership visited meeting engineering, inovation college job functions,to government industrial experience function job.and gradient function job industrial engineering electrical and social development. By : TSHINGOMBEKB, tahitaditshingombe, me, tshingimbeKb Seminaire session day confereence meeting café topic day Presente : study governance career Cvs title: governement and education job engineering college Job duty: Section 2 Tshingombe Tshitadi engineering electrical engineering electrical implementation time table to job time company experimental trade tshingombefiston@gmail.com Phone Number Education Study Program st peace college 10/2020 - Present , jhb r Courses engineering electrical Work Experience Title/Position city power training /st peace college training 02/2023 - Present , rsa engineering electrical visited work place training experimental Achievements/Tasks award degree diploma saqa/ award panel wiring electrical Contact 1.content: engineering electrical career project officer outcome legislation government engineering gov.city municipality engineering theory and practical experience engineering 1.1.scope of work workplace engineering career 2.summarise: assessment officer outcomes education technology engineering : government .minister deputy government . framework mandatory compulsory student order.in order to determine research college order to work.and regulate - home affairs department ;.general requireded work visa for temporary se jour time .v.fs.apppinrment letter completed valid ,pass port ndp critical saqa ,webmaster .. Education department dhet basic..permit student . Council education council trade . engineering council Department labour and public work Development.skill...juatice development Power attorney.dol I fracture social development Department defense .police safety security Sandf.saps psira seta permit bargaining sector competency fire arm gun operationel -dti department trade industries.sector non proliferation the department of trade industry ,of weapons mass destruction council ,regulate strategic, protection interest , government control , implementation student workshop place visited ... -Dmr.departement mineral energy..electricity sale revenue and prices power plant ,fuel use ,stocks,electricity independ ,national treasure economic sars department of energy mandate responsible ensuring private sector participation in pour generation through competition bidding process come regularity primary source development electricity sector -department of science and innovation ,socio economic development goal,resource scie bono center career. Programme administration technology innovation cooperation. - programme research development support. Purpose knowledge.,.strategies,objective, developed humain generation components Basic science infrastucture implementation of research inovation equivalente,science .mission . astronomy. R tax incentives ama. Department economies sars economies empires .. - national energy regulator of South Africa authority mandate ista regulate the electricity piped gaz and petrol ,consolid jurisdiction Coe chief officer legislation , invitation to comment amendment 3800 mW ministerial determination invitation comment net billing rules development , tribunal,info@ nersa organ. - electrical conformance board ECB, South Africa ,designer ,installer and the regulator custome , - for profit find reseller cocs ,outlet online keeping for your client ,tech competence implementation dissemination stand ,address,standard,,, Department economies: How much is the total power supply consumption of ATM click 24;,5,52kw,, Unite rptibke power auplie in banking and finance sector power challange ATM ,cost consume ATM 1,3kw auxiliare automatic teller machine ATM custome size 2.2. Abstract job work: function job work ,function gradient function function 3.entry engineering electrical trade infrastructure implementation support Qualifications career category job skills: 4.purpose asssessor criteria recruitment job ask career education and training engineering office case study. 4.1 case study how to make calculation for a distribution substation 1010,4kv,2x1600KVA,mean introduction substation with an installed power of 2x1600 KVA are a typical,electrical power supply facilities which can value of all relevant physical quantities shall be major equipment inside .-basic guide for calculation dimensionning will be adequate IEC standard and practical engineering experience,of course be side electrical there civil hand HVAC heating ventilation and air condition air. -requirement. Substation which need, Continuous current calculation and dimensioning. -short circuit calculation and dimensioning. - summary of selected equipment. - substation :when say 2x1600kva that mean two power transformer each of theme with rated of 1600kva will be installed inside substation, -strictly speaking but not necessarily 2×1600KVA designation assume on substation.capability coverage peak power demand of 2x1600=3200Kva that further implied parallel operation of transformer .I both transformer on the other hand want will be a working unity other serve as a spare designation (1600+1600)KVA , -the latter mean that substation -this example, will be based on 3200KVA peak demand requirements, beside that other major input data necessary for for calculation and designated -medium voltage rated value. _low voltage rated value,short circuit power short circuit current, number supply cables, -typical of earthing arrangements, maximum ambulant temperature single line diagram of distribution, - substation is give supplies from 10kv distribution network via two cable typical solutions for so called typically of supply Medium voltage switchigears design tag supplies power transformer design tag T1and T2 with voltage transformation ratio of 1010,4 kV power is further distributer to consumer on 0,4KV voltage level busbar system -power substation design system and calculation study engineering System planning short circuit studies load flow studies insulation coordinator study -electrical protection and and control analysis DC system battery calculation. -ac system auxiliary power transmission. Ground grid study lightning protection calculation. -light nint calculation voltage drops calculation conduit dill calculation civil structural substation design, -land survey and site grading analysis, -geotechnical investigation and foundation calculation structural , Miscellaneous substation designation noise calculation . -designation calculation transformee noise calculation harmonic analyse,fire protection, -Ask fact answe how content fault generators to grid loads flow conductor increased power, determine trip mva transmission correct power factor. Outcome of auxiliary tfo ground gride studies drive general arrangements plan drawing elevation section light. -light calculation ,voltage drop 125 volt 90,PVC conduit -outcome of conduits fill calcule wire pulled installed a combination Mont cable, -land outcome survey determine feasibility creation storage result incorporated sit grading plan drawing,site grading , Power harmonic filter non linear , Draw power. 5.purpose and requireded: engineering problem mathematics engineering -Calculation of electric field on substation equipment considering AC ion flow field ,increase of voltage in substation discharge surface high voltage conductor substation be coming influence,order stady AC substation criterion emittion calculate estimate 750kv conductor to ground distance 24,5 Conductor to 25,5 m phenomenon, - Calculation emotion charge alternation cycle discreet time step time step instant balanced applied voltage. Va=Vmax.sin (w(i-1)∆t.. Vb=Vmax.sin(w(i-1)∆t VC=vmax.sun(w(i-1)∆t. I=1,2,3 NT zero value value Va= 0 VB=0,5 VC=+0,5 the first time step (I=1),. Vmax ,..vmin Schema diagram line AC applied . E+onset = nx(33,7+8.13/√r).kV/cm E-onset=n(31,10x9,55/√r)kV/cm -electrical field gth match point conductor. Eg =3M sum Q si/2π€o[1/Rai+1/Rai.e.si] Q on set a,sum m I qci, Q onset b,sum 2m qci Q onset c ,sum 3 m ,I 2m qci 6.required: 750 KVA Conductor,19,5;Min not , calculation motor starting calculation - cable designing program, -calculation home electrique load electrical bi. -calculate electrical busbar size and size and drop , Calculate insulator resistance value, -calculation numbers of lightings fitting and lumen output -Calculation size of solar panels battery bank and inverter. -circuit breaker tripping., conduit size selection program -designation of earthing rate, Selection of mccb,elcbfor main branch circuit -selection of fuse and setting of instant short circuit tripping cb Sharter circuit current calculation various point. -size of capacitor for power factor improvement faulty current calculator. -electrical safety program arc flash Calculation. -E feeder and cable calculator Squared selected capacitor size voltage drops calculation , voltage regulators distribution, Resident load calculation.transformation . -power line voltage faulty power line voltage drop calculation. -electrical safety program arc Flash calculator ,power factor correction touche voltage ground electrique engineering Calculation engineering, calcule size circuit breakers for calcuationlofth, Lighting pnot asssessment regut load lush calcuation ,diesel electromagnetic. 6.requirement : power station and central system -generator KVA , measure 20kva ,3 phase generator has trues of 16(20x0,8)=16 Rating are available so KVA range of power our site 6kva,up500kva,20kva t 100kva -generator full load Curt calculator calcule the full load current of a single 3phase generator voltage 120v,3ph AC generator 2kw ,pf0,8 cos Generator faulty current calcuatir , -cable size calculator as , Parameter: ,rated voltage VP the rated voltage of the generator in volt v, Phase specific the phase arrange in phase AC or 3 phase AC generator rating, specific the generator rating kW or KVA,cos -full load current 3 phase generator specific kW. I=1000xSkw/√3.VLL.cosπ . S.kw is the generator in kilo watt (kW) -VLL is the generator line to line rated voltage in . - Calcule the full load current of a 50kw,480v,3 phase generator the estimated load power factor, 0,85 I=1000.50/√3.x480x0,85=70,8A -full load current for 3 phase generator specified in KVA is calculed as . I=1000xSkva/√3.VLL. -sva is the generator rating kilivolt amp (KVA). Is generator line .to line rated voltage in calculate the full load current of 50kva,480v,3phase I=1000.50/√3.×480=60,1A. -I=1000.Skw/vLN.xcosπ. .. Vln is the generator line .to .neural rated voltage in volt cos(π). 2kw,120v, phase generator,0,85,, I=1000.skva/vln.. I=1000x50/480=16,7A, 3000 watt ,3kw sign 120 ,of =0,8 ,,I=3000/120x0,8x31,2 I=10000/√3x120x0,8=60,1A,,,3 phase ,240 generator, I=10000/√3x240x0,8=30 7500w generator,of, Load,I=7500/(120×0,8)=78,1A, -multiplication factor for stand by load=100%. Of continuous load+50% of intermittent load,max peak operating load=100% of continued load +59,% of intermittent load + 10% of stand by normal operation.load with growth. - Requireded: appliance tv reliable,running 200w,15,; starting , 2300+1200+100 rated outputs. -load listing calculation and generator sizing ration between absorbed power and rated -motor between 0-kw-15kw. Load -15kw-45kw,,45kw-150kw . Efficiency % output inputs , kW consumed by motor absorbe x efficiency x power Kvar consumer by motor =kw2+KVA Multiplication factor for continued load =50% Factor=110% of max normal operating load peak operating , growth factor °110% Of max peak generator size in 70 load factor peak load factor peak load factor peak operating load with operating load with growth factor . Version Francaise 8.Requirements: Poste de travaille bureau d etude: Accueil depanage et installation Electrique Sur renovation our neouf ,mise conformity de tableaux electrique, _ pour la protection de personnel mise en place d UN Nombre adequate d interrupter differential 30 mA contre incs die mise en place disjoncteur remise aux norm de securite ,eliminer Les risque d incendie et ou ekecteisation des personnel lies usage d une installation Electrique defectuese , - verification installation si bessoin -elimination des prise et interrupter defectuex des cable Mal isole , intervention Sur haute et base tension ,recherche de pannes, installation en Voix dinners, 8.1 electricite biocompatible, information,measure electromagnetic,mourn product -meaure et analyse des champs electromegnetic, Effect Sur la Sante CEM Liew exploision . -prevention et curating issue anormalie spectre. -CEM base frequency ligne HT et distribution 230v ,HT distribution appareillage domestic hyperfrequence pulse telephone Relais, telephone,detect WiFi,Bluetooth, -lorsqu on procedeba la measure de champs electrique et magnetiaue priorite frequement au cours , - Les measures la measure de la resistance de votre terre, La measure de champs electrique et magnitude. - la measure des champs magnetic Haut frequency realisation d une cartography de la pollution electromagnetic a votre habitations une etude completed realisat par rapport information Sur Les risque norme et seuil sensibilite , proposition de solution aux problems consent 8.1 required : -dimmensionnement et cablage de cable ,cequi relief Tous Les xomposant d UN system electrique Ce sont le cablage fournissent l energies source d'alimentation la distribution aux appareils aux Lumiere -type de circuit : chute tensions a 10%non critique 0,6m,,51-61,, -chutw tension a 3% critique 5A-200a, 0-2m , Calibre: maniere courant AwG American wire gauge method standard pour desigule diameter des file EST mesurant le diameter du conducteur measure uniquement course file,sans isolant ----calibre file .Europ,norm AwG 00,000,00, Diameter mm 11,68,. 10,40. 9,27. 8,25 Section 107.1. 84,9. 67,5. 53. Code couleur -tableaux principal coefficient global ks×ku=0,69 IB=(80+60+100+50)×0,69=20 coffee regime normal - etude d implementation d une ligne a haute tension our a Tres haute tension lignes aeriennes construction presentation. - l' etude d implementation d une ligne Mele etroitment Les etude technique aux procedure administration le processus complet depend des regle en usage Dan's chaque pays cependant facing procede n EST . - l objectif poursuivit burns dbentendu realiser une ligne electrique fiabilie court minimal Mais s integrant parfait email Dan's l environment l evitment des obstacle eat difficult de passage fort que Tracee evitment des obstacle eat difficult passage font que rarement une ligne droite lots de procedure administrative le parties mise hey sont -les representant de l etat . Les minister charge de l ectricite de l urbanism. Les authorite regionanales prefecture. - Les authorite militaire.les elu Avec depute Les senateur le Conseil general public a EC Les association et organisation Les explotant propietaire. - calcul electrique logiciel note calcul Electrique haute et base tension eclairage public Bureau d etudes. -cance logiciel pour l etude reseaux Haut tension alimente courant alternating pour de tension comprise entre 10000V,et 246kv IL realise Les dimensions electrique Selin le norme nf. 13-200et ie. 60909..cebec 8.2 requirenent dimension reseaux hate tensions en fonction de via source d alimentation et quel que soir made d 'exploitation du reseaux mode Avec configuration court circuit minimum maximum mode normal our pertube et possible realiser fonctionnement different, -la dimensionnement de cables en fonction des courants admnissible et des contraintes thermique , - le Seoul de reglage de protection . - le calcul des temps de fusion des fusible selon course de fabricants . -les courantsde court circuit maximum substransitaire , transitaire permeant triphase et biphase symetrique ,ICC Crete courant coupe courant permanent et default terre . -les calcul des chute de tension Dan's Les canalisatiob electrique et aux bornes des recepteur en regime d 'etablir et au de marriage de moteur.longue du cable -resistance electrique specifie I=P/U Section cable effective. A=Ixezl/Ua ....UN=12v ,p=100W,L=18,8 long conduit cable 1.8 m long conduct cable 1.8 m 2.I=P/In > 100/12=8,3A . Section conduit cable A=Ixexlua=8,3×0,018×18105=0,54 m .normalise 1=1mm J=I/A >8,3A/1mm sq=8,3A density. -les dimensionnement des appareils de protection Les courant de court circuit necessaire aux choix de caracteristique assignees des equipment et ou reglage de protection. - le calcul de courants de court - circuit (ok) par la methode des impedance (NF EN 60-909) et partie 4NFC 13-200 -l ensemble des calcul realisation par sont confirm aux conformity avis technique guide practice ute calcyls des norme CEI ,6050202- et VDE 276. Modeliaer l installation schema unifilaire Avec affichage . - dimension une Maison . Tenor compte de la tailed de Maison pour dimension. -principaux critere pour dimensionner installation - Dimension normalised - dimension en fonction - Nombre d equipment 8.1 etude different affichage des equipment des Donne's et resultat our Dan's chair etique etudier,Poste de livraison moteur generateur ,le calcul font la syntheses case plus ,demarage,impression dossier. -caracteristique de Tous Les equipment fonctionnementle calcul des courent des court circuit en Tous point - de l installation et verification des conditions normative des cables en fonction de routes . - reponsre aux obligation reglementaire attested - information generales Sur project. Carnet de cables au format tableaux . Schema unifilaire des installation note calcul - realisation atnoptique HT. Rapport de calcul hr . Plusier post Avec une touche hta et plusieur configuration de fonctionnement. - reseaux de distribution jour et au find d UN mine . - une partie du reseaux de distribution d une usine . - alternateue asynchrone, alimentation de post satellite,bovine point neutre bpn ,courant d enxlenxhe ENT des transformatwur. -Calculate du courant admissible Dan's la boucle . - valeur de reglage de disjoncteur . -valeur de faut des courant capacity. -valeur de reglage des default homopolaire. 2.Fonctionnalites principales: -calcul effective Selin Les normes . - mise a jour des calxuls en temp reel, - Haut tension et base tension . Dimensionnement et verification, dimensionnement cable cable , variation de Vitesse ,appareil Trace software.logiciel pour la conception le dimensionnement installation haute tension base tension . - Cree Les chema unifilaire d une installation Electrique hair base tension . - applique Les normes national et ou international corresponding pregnant en compte. - Les source et charge Les reglage protection ,la selective,la dilation et . - obtenire et personnaliser Les information note issue.du schema et Les chema Avec Les schemas Avec levlogicial Les Plus courant dubsecteur ,imprimeur Les note de calcul, international,reel ,Dan's le meme projet d 'arcs electrique,d une installation Electrique Transpo (HT/htb.. 8.2 note de calcul Bureau d 'etudes . - realise une note de calcul Sur measure pour reponsre aux besoin specific des industries et simulet tester virtuellement La terre. Quece qu une note de calcule EST UN report calcul numerique systeme our de la piece en consition. -calculation des structure statiaue dynamics - correlation calcul essaies .modelisarion .note de calcul sismique pour test la tenure aux seismes. - livrable Sur calcul vibrateur . - tenue mecanique d une piece of d une effort et verifier si la piece Casse our non .,note de calcul Sur du thermique validation d UN nouveaux . - billan de puissance Avec prise compte de coefficient de faisannement .extension . - Gestion de la filiation et de la limitations. - calcul des chute de tension,reperage auromatique St Manuel xomposant , - generation auromatique de la documentarion. - generation auromatique de la .edition notes de calcule y compeis de note. - base des Donne's constructeur . -Gestion des borne Irv,1720. Attributiin auromatique.module. Coordinatiin simulation des different default de court circuit , contril de conformity , integration de Conte Sur boire optimisation 8.3 Bureau d etude . Marche European note calcul des Structure metallic Dan's l envelope du batiment euro code bureau base de calcul. - action air Les structures,calcul des atrure beyond, calcul des structure en acier, calcul des Structure acier, calcul des Structure mixtrs,calcul structure Bois, calcul des ouvrage en maconerie ,calcul geotechnical, conception dimensionnement,calcul des structure en alliage d alluminuim ,constitue des reglaes train champ application charge de beige action thermique . - une Vue de la Structure,Les relanchement des Barres Les conditions aux appuies ,numerotion de noeud et Barre.,coordine de charge resultat reaction aux appuies aux deplacement aux contraint aux effort internet calculate -8.7 calcul des charge du reseaux electrique. - calcul ecoulement des charge Dans le reseau suit a la construction nouvelle station. -Mission vise calculer le courant des ligne et Les tension des noieds apres la construction de plusieur station electrique et l about de Gros consomateur. -elavorer la strategies patrimonial a long term du Parc,analyser different options contractual pour le renouvelle. -demarche et results.missiin repose Sur la modernisation reseaux electrique .calculation et simulation Group permetre Lance de calcul electrique chute de tension cable et transformateur en contraint intensity maximum. - principales fonctionnalites. Cartographie topologies de reseaux import dear information de la base abonne puissance souscritw consomation.personnalite de simulation de calcul Avec ajoute une extension visualisation graphics solutions collective. - domain . 9.required domain d 'application distribution resaux ; 29kv,r 49 ohm bovine j 49 ohm -presentation plan protection hta troncon depart depart hta hey de Barre hta transo htb ,E=EMF,Zd= impedance direct reseaux court circuit biphase default Se site entre Les phase 2 et 3j1=0=-j3.j2 courant circular Dan's le phase system omopolaire phase et la terre 2j2,=-j=(a-a) Ezd+z,. a=EJ.2π/3 Les impedance zd et Zi sont egalea d our ICC bophasee = j29 =oj30=√3.E2.zd.√3 ETA t inferieur a ICC,biphase EST inferieur a ICC 2 triphase , Default biphase ayant une resistance negligeable EST limited par impedance dear element dubreseaux ,iccb= UN 2.√Rl2+(xhtb+Xtb+xt. Reglage des protectuin d une arriver.ioDS= jcw.vi.10a=Vo.O.iod= vi+j(r-cd) _required. Protection dun alternateue , protection contre Les surcharge , protection contre Les court circuit , -parametre dimensionnement dielectrique d UN group. On: puissance due moteur thermique ,UN : tension assignment fournie par l alternateue ,In courant assigned fournie par l alternateue , Ach principal d' in group electrogene analyse course protection norm our Les besoin dear application ,reglage protection surcharge au long retard dbouvien coirbe surcharge. - pour raison economique levmotwur thermique d UN grouped replacement peut etre atrictment dimensioned pour sa puissance nominal s IL ya une aurxhage de puissance active le moteur diesel. Billan de puissance active des charge prioritairw,une grouped de production doit pouvoire support Ter aurxhage d exploitation aurxhage d exploitation ,surcharge pour une Marche uni horaire. -aurchage pour une Marche routes regime uniform. Protection contre le court circuit s. -les courants de court circuit eat d une courant aperiodic d UN courant sinusoidal ,irms..in..3.. Regime substransitaire,regime transitaire,regime permebt,alternateue Avec excitation compound surexite alternateue - regime substransitaire apparition d UN court circuit aux bornes d UN alternateue,Les courant s etablit d'abord a une valeur relativement elevee order 6a 12In pendant premier cycle o a 20 mile second l amplitude d une Tel courant de court circuit eat definite par, -rea tamce substransitaire de l 'alternateur. - le niveaux d 'excitatiob prealable instant du default. - l ' impedance du circuit default impedance court - circuit de l alternateue a consider t la reactance substransitaire Xd second expeime en % u. Tension phase neutre par la construction XD ohm = UN xd/100s S=√3 Un.In.. Regime transitaire: Se site de 100 a 500 ms apres l apparition du default partire de la periode jusq 15,2fois le courant In - le courant default pendant 10 second habituellement a 2 a 3 fois le courants. - Plein charge de l alternateue calcule charge debl alternateue . Calcul du courant de court circuit. Les constructeur precise en general Les valeur des impedance et constant necessaire analyse de fonctionnement en regiment transitaire our permebt debvaleur d impedance en %,Selin dear puissance a d 'alternater.,. KVA 75to 500, XD ,XD transitairexd permenebt,resistance etant toujour negligent deviant Les reactance intensity de court circuit en periode , icc3=U0/XD.1/√3..XD en .. Icc3=In/XD .100.(xden %)..Ce valeur sont a rapport du courant de court circuit aux bornes d UN transformer ..dv/St and .Di/St..MOSFET gate different driver for electrique machine .breaker - pour une meme puissance Les courants en CAS default proche d UN alternateue seront 5 a 6 fois plus faible que ceux cette difference EST encore Accenture par le fait que le groups electrogene our en general lorsque le reseaux BT eat alimente par source normal de 2000kva le courant court circuit eat 42kva aux niveaux du jeux de Barres BT eat alimente par la source 2,grouped replacement de 509kva a reactance transitaire de 30% le courant de court circuit s etablit a 2,5 KVA environment soit une valeur 16 fois plus faible que Avec la source normal....peek 9.1 peak dv/St..Di/St turn on off dv /St . Inductance definition derivation type quality metal iron cobalt non iron element , magnetic flux that is proportional to the rate of change of the magnetic field is known as induction,the amount of inductance requireded produces to an end could . Factor influence inductance. 1the inductor wire has specifical number of turns..the material that was used to make core core appearance ,Faraday established the electromagnetic inductance low, derivaton of inductance look at a DC source that has the switch turned on the current flow from zero to a specific valeur causing a change it flow rate consider flux shift current flow measure in term time d¶/St use Faraday low of electromagnetic induction to solve the problem E=N(d$/dt).,,E= French version 8.Requirements: Study office workstation: Home troubleshooting and electrical installation On renovation our new, bringing conformity of electrical panels, _ for the protection of personnel installation of UN Adequate number of 30 mA differential switch against incs die installation of circuit breaker reset to safety standards, eliminate the risk of fire and or ekecteisation of personnel related to use of a faulty electrical installation, - check installation if necessary -elimination of faulty plugs and switches of poorly insulated cables, intervention on high and low voltage, troubleshooting, installation in Voice dinners, 8.1 biocompatible electricity, information, measure electromagnetic, mourn product - measurement and analysis of electromegnetic fields, Effect On Health CEM Liew exploision. - prevention and curating spectrum abnormality issue. -CEM base frequency HT line and 230v distribution, HT distribution domestic microwave equipment pulse telephone Relay, telephone, detect WiFi, Bluetooth, - when the measurement of electric and magnetic fields is frequently given priority during the course, - Measurements measure the resistance of your earth, Measurement of electric fields and magnitude. - the measurement of high frequency magnetic fields realization of a cartography of the electromagnetic pollution at your dwellings a completed study carried out in relation to information on the standard risk and sensitivity threshold, proposal for a solution to the problems consents 8.required: -dimensioning and cabling of cable, which relief All the components of an electrical system These are the cabling supplying the energies power source the distribution to the devices to the Light - type of circuit: voltage drop at 10% non-critical 0.6m,,51-61,, -chutw voltage at 3% critical 5A-200a, 0-2m, Gauge: current way AwG American wire gauge method standard for desigule diameter of wires EST measuring the diameter of the conductor measures only run wire, without insulation ---- gauge file .Europ, norm AwG 00,000,00, Diameter mm 11.68,. 10.40. 9.27. 8.25 Section 107.1. 84.9. 67.5. 53. Color code - main tables overall coefficient ks×ku=0.69 IB=(80+60+100+50)×0.69=20 normal coffee regime - study of implementation of a high voltage line or very high voltage overhead lines construction presentation. - the study of implementation of a line Mixed closely The technical study with the administration procedure the complete process depends on the rules in use in each country however facing process n IS. - the objective pursued burns relaxed to achieve a reliable electrical line short minimum But integrating perfectly email bet hey are - the representatives of the state. The ministers in charge of electricity and town planning. The prefectural regional authorities. - The military authorities. The elected With deputy The senator the General public council at EC The association and organization The operating owner. - electrical calculation software note calculation High and low voltage electrical public lighting Design office. -cance software for the study of high voltage networks supplies alternating current for voltages between 10000V and 246kv IT realizes the electrical dimensions according to the nf standard. 13-200and ie. 60909..cebec 8.requirenent network size voltages depending on via power source and regardless of network operating mode With configuration short circuit minimum maximum normal mode or disrupted and possible to achieve different operation, - the sizing of cables according to the admissible currents and the thermal constraints, - the protection setting Seoul. - the calculation of fuse melting times according to manufacturers' race. - the maximum short-circuit currents, subtransmission, three-phase and symmetric two-phase permanent transit, ICC Peak current interrupting permanent current and earth fault. - the calculation of the voltage drops in the electrical pipes and at the terminals of the receivers in the establishment mode and at the motor marriage. long length of the cable - electrical resistance specified I=P/U Effective cable section. A=Ixezl/Ua ....UN=12v ,p=100W,L=18.8 long conduct cable 1.8 m long conduct cable 1.8 m 2.I=P/In > 100/12=8.3A . Cable conduit section A=Ixexlua=8.3×0.018×18105=0.54 m .normalized 1=1mm J=I/A >8.3A/1mm sq=8.3A density. - the sizing of the protection devices The short-circuit current necessary for the choices of characteristics assigned to the equipment and or protection settings. - the calculation of short - circuit currents (ok) by the impedance method (NF EN 60-909) and part 4NFC 13-200 - all the calculations carried out by are confirmed with the conformity technical advice guide pr .10.of electromagnetic induction to solve the problem ; E=N(d$/St)..where n is the coils number turns write equation E=-N(d$/St)..E=L(Di/DT).....HI=NI..denote the magnetic ,B = u.H... I= NBA/H.f L=u.N.2.A./L= u.N.π.r.r./I... Type of induction the magnetic flux associate with a coil or circuits change any type . - coefficient of self induction the current is proportional to the number of flux linkage with the coil,N$ is directly proportional or N $ is the number of turn could coefficient L=(N$i)..I=I amp..N=I L=¶,I Faraday N(d$/St).e=-I(Di/dt) and. Units and dimensional formula of l it's S.I unit Webber / amp =joule Amp ,coulomb x volt amp = volt sectbamo = ohm x sec ,,M=M.L.I.t.r.A.A..... M=K.L1.M.L2.magnetic series..La=L1+I2...la=I1+I2.... La=I1+I2+ parallel ,I=6H,. F=70HZ.,x=2.π.f.I.....x=2×3,14×70×6=2637,6 ..calculus question .f(x)DX calculus according to the ohm low formula for a capacitor , capacitor currents is proportional to the time derivative of capacitor voltage, I=C.dv/St.. capacitor differentiative voltage with respect to time and this time derivatt voltage of voltage. advanced calculus instateneous rate of change of an (x,y) ..[Dy/DX]. ,I=E/E,,,G=1/R...I= C.de/St..variable for current (I) and voltage. - Capacitor store energy in the form of an electrical field, calculate the energy stored in a capacitance by integrating the capacitor currents (p=I.V)..over time since we know that power is the rate work (w) is done work from (w) is done work from zero voltage ,P= dw/DT,, dw=P.dt....capacitance (c) and voltage + v) into the integrand energy capacitor capacitance, integrak .f(x)DX .. DC input output ...dvout/St..v.in ..integral . integral out ..integral .To vin dt... R=dv/Di.. equation diode...x=Dy/dt.(x)..y=I/int.dt -application electrotechnique circuit rlx transformateur eclairage 11.required : besoin en energies de reglage dimension, -determination des besoins en puissance de reglage secondaire et reserve de minute , - la puissance reglage secondaire et reserve minute a reserve sont dimensionnement. -conjointment par le quote date de livraison ,le dimensit n EST plus effective trimesteiellement pour le trimesteeaui a Mais individual -desequilibres historique du system Les pannes Se central sont exclu . - probalite statistics de faillance des different type centre d une puissance en compte 100mv , - classification de dinners d entre heur date Mais jour Ferrier , details de la procedure de dimensionnement,sont dispnibles Dan's l a is Sur le dimensionnement dynamic tranche horaire de jour , - dimensionnement des besoins fcr La puissance de la frequency contrainement reserve maintenir par la get allement gestionneur reseaux , - quantite total syst internet ,Dan's Les aystt interconnected d Europe continental resulte de la pertubatiin de +-3000Mw ou d' une dimensionnement probaliste tenant compte de diffet facteur influence doit garantire que la 12.1 electricite ligne a haute tension ..production ,Total estime TWh,,nuclear estime % , hydraulic au file d way ,autre renouvela le, thermique a flannel % non renouvellable, thermique a flammable, -consommable totalperte, finale,par habitant TWh, manage agriculture , industries,service %,. Transport services , commerce %, commerce exterieyr importation TWh, exportation twt , -Energy relever des compteur et calcul de la consommatiob ,gestionnairw de reseaux distribution, - lire Les index Sur Mon compteur d electricite our de gaz. -fiche pratique,relever estimate 9209meter cube, chiffre 23355kwh ,si Mon compteur electrique a deux Plein heure , heure Creuse, Je relevelea xhiffres indique numero compteur ,15,237kwh,. 12458kwh .. 12.2. Measure des harmoniques Dan's Les reseaux electrique, procedure pour l analyse harmoniques du resaux , -action correctives ponctuelle,action preventivea a long term , -Quel appareil pour measure CES indicateur , -Quel rang d'hanarmorique procedure pour l analyse ,harmoniques du reseaux ,measure des harmoniques realise Sur site industrial. -A titre preventif a fin d 'avoir une Vue globale Sur l 'etat du reseaux. Cartograph du reseaux, -en Vue de measure corrective a fin de termine corrective a fin determine l'origine perturbation solution require pour l eliminer, -port verified la validite d 'une solutions a la suite de modification Dan's le reseau de distribution pour verifier la reduction - Les indicateur harmoniques peut etre measure expert present Sur la site pour periode temp limiter par instrument de measure installed fonction pandant UN temp period au dispositive determiner. -action correctives: lorsque pertubatiin sont observe harmoniques sont suspect de measure ,courant et tension sont effective aux niveaux debla source d'alimentation heux de Barre du tgbr Sur chaque depart tableux general ,pour de result fonctionnement installatt etat batteries condensateur Nombre de garden , - determiner l'eventuel declassement necessaire des equipment. - determiner le calibre de routes Les system de protection et filtre necessait d emission harmoniques maximal admisst Action preventivea a longu term. - permenebt measure ,measure certain Nombre de point, different installation Sur period situation. -fluctuatiin source d 'alimentation. -variation Dan's Les fonctionnement ,ajout de Nouveau equipment, -des appareillage measure installed aux reseaux de distribution permetre des appareils des measure installed permanance derectent Suive . -poye une Evacuation global de l 'etat du reseaux analyse preventive, -la location de material de measure l 'appwl expert ,la connexit et deconnexion,d 'eqyipement de measure pour l 'evaluatio. Global de l etat du reseaux, l analyse Sur le tableau general,base tension oar l 'appareil arrive et ou appareilmesure equipe chaque depart , - pour Les action corrective IL EST possible ,determine le condition foncty ay moment de l incendie, -desser une carte reseaux evaluation mise ouvre. -quel appareil pour measure CES indicateur a,Les appareil measure dournisse des information valeur instance harmonies, sont conxue selon norm CEI 6100-7..CEM.. technique d essaies,this angle tensions indicateur long term 10minutw,period 1 semain,tension harmoniques maximal norm en 50160 caracterisa valeur . -harmonique impaired non multiple,rang,ampli relative, -harmonique impaired multiple de 3,amplitude relative UN , -harmonique pairs rang amplitude relative , -instrumwnt portable ocilloscop,indication distortion courant ,analyser numerical Fourier alfo l - U ,10 sys ,50hz 12 period 69h -les cout des perte du transformateur court annual du pertes . -les lertes annuel d UN transformateur eat evaluee for Wperte=(Po+Pk×k.k)×8760.. Wperte Montana des pertes annuelle en kWh . -Po: pertes a video en kW , Parameter ,specified Dan's . La caracteristique du transformateur ..Pk perte en charge en kW ,parameter specifies envdans le caracteristique du transformateur. -k: facteur de charge ponderee Sur l 'anne ,,,8769 : Nombre d' heures de fonctionnementlm. Dan's l 'annee (24/24,365jl.) - decharge ponderation Sur une journee Sur site industrial , Facteur de charge ,pondered, - Sur UN jour (1440 minute) de charge Formulae √sum t-1440,t=o..k.k.indice k xt .. √(0,3)exp2×150+0,65 exp 3×(240+(0,85)(0,85)×330+(0,5)(0,5)×90+(0,85)(0,85)×510+(0,3)(0,3)x120)/1440 -chargr pondered journaliere eat Alor 0,724. -chargr pondered annual vaut √ j365 sum j=1 k.x.j /365.. CTA pertes = C× W pert X (1+l)exp n-1/l×(l+l)exp - court total acrualiae de Perte. C: evaluation du court Moye. Par kWh par an , W Peete , perte annuelle l: taux d ' actualization, n : durede vie esperesy trans global dea transformateur evaluation economic l achat d UN tranafo ,actualisation Cour global long sure vie achat -CTO=PP-AxPo+Ok.. ..pp :court d' achat du transfo, A court perte a video ,Po total perte a video (€/w). B: Cour de perte due charge exp €/w Ok: perte du charge gaewntie . A=Ckwh×8760(l+l)expn-1/i×(l+l)exp .n .. B=Ckwh×8769×k×k(l+l).exp.n/1×(l+l) exp.n -l: taux d actualisation (%. n:sure de vie en arc. Ckwh : prix du kWh (€/kWh).., 8760: Nombre d 'heure de fonctionnement Dan's l ' annee 24/24,365 j , K:facteur charge pondered ,selecteur industrial, UE -27 charge moyen ,40%,70,% -donne, Type du transformateur 1000kvA , - charge moyenne : 65% (24/24) -cos π moyen de la charge :0,90. - Suree de vie economique 29ams , - Cour de l ' energy : 0,06 euro 12.required: NF..50464-1 -1pertes a video ,perte did 14000,perte coc 1100, perte Bob,perte Aop. -2 perte du charge a la charge ,perte DoD,perte coc,perte perte, 3.cout indicator ref DoD ,perte DoD ,perte perte ,perte A,a 4.perte annuelle kW, 5.rendement perte.98,95,pertecox 99,16,98, 99,39 6.Perte a vide ,12264,96368234,6745, 7.perte due la charge kWh ,48114,38862,33319, 8. Total kWh , 9.xout annuel de perte,perte Vue perte charge,, 14..Billant matiere ,,concentrateur ,indicateur . cuivre revenue, rejected 100% plumb .metallurgie luxiviation.. geotechnical 1 to 15.probabilte d UN evenement EST Nombre d issues favorable devise par le nom re d issue total . P(A)=1-P(A),,P(AouB)=P(A)+P(B).. .. 15.1 requireded: Usinage fabrication une mecanique qui necessite une interrupter et fusible Vue que l usine achete CES componasa ts electrique en Grande quantite.,des interrupter achete soient defectuese ingenieure qui travaille recolt dinnwr,Sur la defUlkan e de CES appareillage don't certaines sont resume, -defectuex interupteur 6, fusible ..total -no. Defectue interupteur 182..fusible ,total, -total interupteur ,et fusible 208. -probalite q UN interrupter soit defectuex ,-su la probabiltw q UN fusible soit defectuex EST une fusi le soit deferues EST 9,9625,combiende fusible so t bon ,Sikes interupteur et UN fusible defetue ay hazard ,en deduire la probalite xhouaire in interrupteur our d UN fusible qui be fonctionnement pas,divider nom re des interrupteur Nombre d interrupteur Somme des Nombre interrupter defectuex ,6-182=188, P(N) =6/188=3/94=0,0319 si la probabiltw q UN fusible soit defectuex de 9,0625 ..soit avenement f qu UN interrupter soit defectuex 1-0,0625=0,936.. 15.1.required: need for dimension adjustment energies, -determination of secondary control power requirements and minute reserve, - the secondary adjustment power and minute reserve to reserve are dimensioned. - jointly by the delivery date quote, the dimension IS no longer effective quarterly for the quarterly individual but - System history imbalances Central Se failures are excluded. - probability statistics of failure of the different type of center with a power of 100mv, - classification of dinners between time and date but Ferrier day, details of the sizing procedure, are available in the dynamic sizing time slot of the day, - sizing of fcr needs The power of the frequency constraint reserve maintained by the network manager get all the way, - total internet system quantity, In Continental Europe's interconnected systems result from the disturbance of +-3000Mw or from probalistic sizing taking into account the diffet influence factor must guarantee that the 12.1 electricity high voltage line ..production ,Total estimated TWh,,nuclear estimated %, hydraulic in line d way, other renewed, thermal flannel % non-renewable, thermal flammable, - total consumable loss, final, per capita TWh, manage agriculture, industries, service %,. Transport services, trade %, foreign trade import TWh, export twt, -Energy reading meters and calculating consumption, management of distribution networks, - read the indexes on my electricity or gas meter. -practical sheet, find estimate 9209 cubic meter, figure 23355kwh, if My electric meter has two Full hour, Off-peak hour, I relevelea xhiffres indicates meter number, 15,237kwh,. 12458kwh.. 12.2. Measurement of harmonics Dan's Electrical networks, procedure for the harmonic analysis of the network, - one-time corrective action, long-term preventive action, - Which device to measure CES indicator, -What rank of hanarmoric procedure for the analysis, harmonics of the network, measurement of the harmonics carried out On industrial site. -As a preventive measure in order to have an overall view of the state of the network. Network Mapper, -en View of corrective measure at end of end corrective at end determines the origin of the disturbance solution required to eliminate it, -port verified the validity of a solution following modification in the distribution network to verify the reduction - The harmonic indicators can be measured by an expert present on the site for a temp period limited by a measuring instrument installed function during a temp period on the device to determine. - corrective action: when disturbances are observed, harmonics are suspected of measurement, current and voltage are effective at the levels of the power source hey of the bar of the tgbr On each departure general table, for the result of operation installatt state capacitor batteries Number of garden, - determine any necessary downgrading of equipment. -determine the caliber of roads The protection system and filter required maximum allowable harmonic emission Long-term preventive action. - permenebt measure, measure certain Number of points, different installation On period situation. - fluctuatiin power source. - variation Dan's Operation, addition of New equipment, -measure devices installed in distribution networks allow devices to measure installed permanance derectent Follow . - poye a global Evacuation of the state of the networks preventive analysis, - rental of measurement equipment for the appwl expert, connection and disconnection, measurement equipment for the evaluation. Overall state of the network, analysis On the general panel, low voltage where the device arrives and where the measured device is equipped each departure, - for corrective action IT IS possible to determine the functional condition at the time of the fire, -draw an evaluation network card opened. -which device to measure CES indicator a,The measuring device provides information on instance harmonic values, are designed according to norm IEC 6100-7..CEM.. test technique,this angle voltage indicator long term 10minutw,period 1 week,voltage harmonics maximum norm in 50160 characterized value. - non-multiple impaired harmonic, rank, relative amp, - harmonic impaired multiple of 3, relative amplitude UN, -harmonic even rank relative amplitude, - portable ocilloscop instrument, current distortion indication, numerical analysis Fourier alfo l - U, 10 sys, 50hz 12 period 69h - the cost of transformer losses short annual losses. - the annual letters of a processor are evaluated for Wloss=(Po+Pk×k.k)×8760.. Wloss Montana of annual losses in kWh. -Po: video losses in kW, Parameter, specified Dan's. The characteristic of the transformer ..Pk load loss in kW 16.requirement : function functions.. Psychology's b, function job analysis function job analysis is the examing job requirements ,and assigning the right conditions, qualifications no rwing condctu no arm ,lifting , -functional job analysis is method used hr (l/o) psychologie expectation of their specifical position private . -project work job roles that requires intermediate math skill essential job roles call ,job role alarming state math skill ,job roles for those with intermediate ,how to use intermedt create an assessment group arround ,valuable and important resource in any company job emphasis on qualitative assessment. -work or conducted that require cooperation between management compagny and its workers a typical compagny workshop ,communication verbak Please to grade the output employer, -Different classification system for the position analysis question Aire is standard position. - functiin : job analysis is qualitative assessment form Whixh means focus combine organisation impact overall operate conducting assessment, -Compagnies and organisations scrutinise virtually . - the scale of workplace definitely. The are many ways to conduct functional occupation analyse but measure scales data thing instruction ,scales reason ,math language, resource, employee supplier to employees job physical measure , qualifications measure , -psychomotor : and psysical requirements of job the job analyse survey is mostly used rate the functionni requireded of job rating. The function Al rating analyse process may occupation analysis, -job description: ,resulting from the primary resultat of a job analyse job session is new job description function hr DEP ,security duty statement offer. -Categories of information regard both job prospective,things data worker instruction .. Function job analyse :user computer to collected and collate data and draw conclusions, constructy worker use home physical tools to accomple building task,the tools must be as up date as possit collective conditions candiat for position,process relevant compagny work instruction basic , completed . Function in the real world when we introduce student to the functions we typically bring the concept to life through the idea of function machines but function. Function machines s: students easily grasp of funct machine input something happen .function rules and input can predict the output determine the input image imagine if input ..metaphors event nby setting a large card input slot machine mysterious function rules,student input the class ,input 4,5 Output 5,15..find the composition function in loving 2or more functy the teacher or student create spread sheet function machiy, job functions sound .job title ,job read roles -job function meaning: wath is the purpose of job functions is a job positions to give completed description of the primary responsabilite ,the emplee will perform we define,job functions as a detailed list of employee action and duties part the roles job function ..job function vary position but list job supervisor department team provide support training to support meme er protocode for increase maintence a working document.of best practices,report to director: job it clear great ,job function ,work function essential work function essential functions work funxty .job it clear great .job function essential functions . -job function vs job titles a job function is usually list of responsibilitie ,job title ,tags ,job description job content,job descrip management.. -gradie t in real life ,part wath is a line line extend fevere beyond director a line segments ray end point , gradient of a line .want to keep learning math subject knowledge graphs function solving equations.. Y=4x.x.x-2x.x+7.....0point (1,9) Take derivation respect 12x.z-4x...coordone (x=1)=...x gradient = 12(1)+1)-+4(1)=8..gradient function (1,9)is 8 - to find the gradient of function point slop point derivative point ,find vector function .problem to calcule gradient of this loss function .. - .c (y,w,xb) 1/n,nsum..l=1 max find derivation vector is network dual quantity neural matrix operatt . -Gradient of scalar function .. f(x,y)=3.x.x.t hange to change function partial derivatives..gradient g(x,y) ..matrix ..y1=F1(x)=X1. .y2=f2(x)=X2, yn.fn(x)=xn 17. Requireded: calcul taux de charge eat le rapport en pour ,du courant preleve aux borne du disjoncteur ceat Somme des courants transitaire Dan's Les canalisatiob different Sur courent nominal transfo. -Inontra transfo=I1+I2+I3+I4..Disjonc transfo 400kvA,, charge different .. Heure,, depart 1phase 1.2 3 amperage 14h00 20h000.. 18.required : government .minister deputy government . framework mandatory compulsory student order.in order to determine research college order to work.and regulate - home affairs department.general requireded work visa for temporary se jour time .v.fs.apppinrment letter completed valid ,pass port ndp critical saqa ,webmaster .. Education department dhet basic..permit student . Council education council trade . engineering council Department labour and public work Development.skill...juatice development Power attorney.dol l fracture social development Department defense .police safety security Sandf.saps psira seta permit bargaining sector competency fire arm gun operationel -dti department trade industries.sector non proliferation the department of trade industry ,of weapons mass destruction council ,regulate strategic, protection interest , government control , implementation student workshop place visited ... -Dmr.departement mineral energy..electricity sale revenue and prices power plant ,fuel use ,stocks,electricity independ ,national treasure economic sars department of energy mandate responsible ensuring private sector participation in pour generation through competition bidding process come regularity primary source development electricity sector -department of science and innovation ,socio economic development goal,resource scie bono center career. Programme administration technology innovation cooperation. - programme research development support. Purpose knowledge.,.strategies,objective, developed humain generation components Basic science infrastucture implementation of research inovation equivalente,science .mission . astronomy. R tax incentives ama. Department economies sars economies empires .. - national energy regulator of South Africa authority mandate ista regulate the electricity piped gaz and petrol ,consolid jurisdiction Coe chief officer legislation , invitation to comment amendment 3800 mW ministerial determination invitation comment net billing rules development , tribunal,info@ nersa organ. -electrical conformance board ECB, South Africa ,designer ,installer and the regulator custome , - for profit find reseller cocs ,outlet online keeping for your client ,tech competence implementation dissemination stand ,address,standard,,, Department economies: How much is the total power supply consumption of ATM click 24;,5,52kw,, Uniterptibke power auplie in banking and finance sector power challange ATM ,cost consume ATM 1,3kw auxiliare automatic teller machine ATM custome size, 18. Requireded: energetical electrotech energy and electroenegetical ,mass government , weighting government products v net metering basic,metering credit ,calculation and billing , designing net metering faculties, common mistakes, minimum, monthly reliability , additional resource ,mass - renewal .electrical compagny state low Requireded. -distributiin compagny ever source and private megawate ,,national gride ,electrical and private cap megawat. -small hydro electrical - class number and size private facility -class1 metering and 60kw or less. -class2 , 60 kW ,mW -claaa metering facility ,2mw,type, sust ,assurence metering dockets system rules single parcels sub division,owner or operator , municipality ,10mw ,self designed comin mystek . -eskom entrepreneurs commissioner electrical split meter program, Eskom Gauteng electricity network infrastructure upgrade programme ,main objective initiavie, reliability aupllt and empowering them to control and manage their consumption is currently rolling out smart prepaid metre in Sandton specific targeting ,mall programme , consultation process , meeting,customer educate , customer awareness,fortune ward meeting, explainning benefic free basic electricity , Bloc tariff . The meter ciy,costomer interface unite ,smart prepayment split metering solutions, remotely,display,smart metter ,allow,capable two way communication, between custome road , information meter , programming up dates,automated , instruction sent to the meter to interrupt, -the power supply prepaid , -meter/demonstrate//CIU/// 19.1 Circuit diagram of analogies energy meter:- System input phase parallel act DC power supplies,counter kWh ,load side Line voltage,PGA or,ADC2,ADC1,X,and digital ..residential outlet. - system control =1,display =1,quadrant metrology processor =1, voltage sensor =1, current sensor=1, terminl block=1, -digital energy meter ,powers supllies yes and max 2,3,2=1,Db connector =1,smart card reader , micro controller l =1, optocouple =1,load digital energy meter ,relay ,LCD,main spply 19.2requirement: ATM term standard automae teller machine it an electronic device that is used only bank customer to process account transaction the user access their account their account through a special type of plastic,card that is encoded with used information on a magnet atric the strip contain an indentification coderhat is transmitted to the bank central computer but modem the used insert the card into atm to access the account and process their account transaction invented but jgon shepherd in 1969.. Bloc diagram for arm machine system , -start yes,walking to insert card y es, insert , waiting to enter yes the pin yes, waiting to check to pin yes , waiting to enter amounts yes, waiting to enter amount yes, verify balance yes,get cash,in correct pin eject, -users or engineering entry exit hard , generic iso ,IEC model for functional sizes measure. Block diagram ATM .. High security module yes memory test,key pad yes car reader yes ,etc yes cental unit output lcddriver yes display yes, motor driver output yes,speak driver yes, relay yes AC switch driver yes ,ethernet yes and dsk yes communication,powerreser yes,power supplies yes standard device, -input device the input device like card reader and keypad, Card reader :the card is an input device read data from a card,card is part of the identification particular account number and the magnetic stripe on the backside of the ATM card is used for connection with the card the card swiped pressed ,jet pad,after machine ask identification unique balance inquiring pin so draw money 20.required:une case diagram for Bank ATM systems ,system aliw custome access clerk cashier or bank teller work ,step authenticak ATM plastic ATM card users name and pin ,user name and pin ,use case diagram for . -check balance yes , deposit funds yes, withdrawal cash yes , deposit funds yes , atm transit yes , extension point menus provide, custome yes, custome button yes extension,atmb.. -enter card used name ,invalid,request ,with draw display ,case diagrams Bank ATM , maintence yes, repair yes,replanch yes up grade diagnosis, -software engineering ,state transition diagram for an ATM systems,use case diagram for library management system, -use case diagram for online banking. -DFD for ATM systems, -difference between use case and test case. -state diagram for online banking system.yes - Data flow diagram for online banking system.yes -Class2 diagram for mall management system. -class2 diagram for hotel manage system . - class diagram for theatre management system . -class2 diagram for bus standard. -class2 diagram for airpor management system. -Class diagram for scholaire. -software class test . - rules for data flow diagram. - components basic diagram. -short note activity. Information system development. .. components diagram. Customer Console yes..ATM machine yes ,bank database yes ,card record yes, atm transit yes,employee Consol yes ,client yes desktop yes, - flow charter organisation concept map network diagram,use case mind mapping ,wire frame, Orders yes, item yes, product yes, custome yes, -----+++schematic diagram of the printer. Inspect camera yes, pressure control yes,temperature control yes, amplification yes ,jet driver yes , control yes system ,".y motion controller temperature control yes, 21.required : engineering electrical . machinery motor and generation AC DC courent..transformer.relay contactor field electrotech.. .contents : namenclature and name plate information..I'd permit,, step 1 -Dc motor theory ,step 2 disassembly ,step 3,step 4 armaturea, steps 5 frames, 6vemtilation and accessories,7step ventilation and accessories ,step 8 motor assembly and final test ,step on site troubleshooting ,step faillure analyse ,step DC machine data sheet ,carbon bushes , current , density and performance,step installation ,step startup and Basile information,step operationel monitoring and maintenance,step motor and baseline installation data,how to read a motor nameplate,step motor storage recommand -step how to rewinding and electric motor ,step disassembly motor , steps wipe off,step remove the motor ,step pictures step force armature ,step cut the old winding,tips enamel or nulon and polurethane coated magnetic wire , -step electric motor insulation papper,step utility knife step wire cutter,flat blade screwdriver plier lint ,free cloth work gloves , motor rewinding process, + 1 remove windings,removal insulation papper clean housing,burn remnant of insulation, prepare new winding ,on a spool,insert new insulation papper into housing ,papper into ,step solder and insulate windings end .plie off solder end ,varnish windings reasemble motor test. -analyse 3 ph 3000rpm magnetic field , motor inscription board , motor nominal voltage nominal current.pf rotation r.p.m 5%frame 1,5disamble removal bearing pain, -calculation parameters for New winding IP 87 mm, Db =128,2mm,75,5mm,package dimensionnement of iron core measure length of stator package io =87mm, - diameter of stator package Dv=128mm inner diameter of stator package D=75,5 mm number of stator gaps z=24 -step calculation of parameters for New winding Now measure dimension of stators slot , width of stator slot ,b1=6,621mm , b2=8,5 mm height of stator slot h = 13,267mm opening of stator slot ,no=2mm, height of slots neck a 1=0,641mm tooth width bz =3,981mm -Qu=π/B.(b1.b1 +b2.b2)+h/2(b1.b2).. e=Qu=π.b.b/4+hb.. -calculate number of poles pair .. P=60.f/NS=60×50/3000=1..pole number ,speed 2810.. -calculate pole step £=π×D/2.p=3,14×75,5/2,1=118,53mm. -t: pole step, -calculation pole surface . Qp=T.lp=11853,87=1031211mm,,=103,12mm -calculate pole surface: Heig of lamel 1mm 0,50 to -heigh of lamel in m 0,50 to 0,65 Type of isolation papper 0,88 to 0,90 -lacquer 0,90 to 0,92 , phosphate 0,92 0,94 no isolateur 0,99 Iz = Ki .LP = 0,92×87=80.04m -calculation of the tooth length Hz = Hu+a1=B,267+0,691=13,908m,, hz-tooth length, Hu height of stator , - calculation height of the yoke stator .. hj=1/2(Dv-D-2.hz).. =1/2.(128-75,5-2,13,907)=12,342mm.. -hy :heigh of the yoke ,Dv external diameter. -step calculation the cross section of teeth of one pole . Qz=z.bz.iz/2.p=24.×3981×80,04/2×1=3823,67mm=38,237cm ,cm -Qz one - tooth cross section, z number of slots,bz tooth ,width qualation of slots -Q4=π/8.(b1.b1+b2.b2)+h/2(b1+b2)= π/8.((6,621)(6,64)+(8,5)(8,5))+ 6,621+8,5)=93,4mm -calculation numbers of slots per pole an ..q=z/2.pm=24/2.1.3=4 .q- number of slots perpoles ,z= number of slots- Step calculation of pole step inslots £=z/2.p=24/2×1=12. Winding factor ..q=1,3,4,5,6,7,8,9 ..€=1, ..0,99..0,960...0,95... -€=€z+€r.... 21. Requireded:calcuation of the induction in the teeth of the stator , -Bz=Bzr.×Qp/Qz=0,65×103.12/38.237=1,753T. Bz : induction in teeth of stator ,bzr induction in air gap. - calcuation of the magnetic flux of one pair of poles . d= Bzr.Qp/1.5 exp.7 =0,65×103×13.(10)(10)(10)(10).=0,00427wb .¶= magnetic flux per pole Webber. -calculation of the calcuation . Number of turn in the phase . W=0,22.uf.a/d.f.€=0,22×230×1/0,0427×50×0,958=247,39..W- Calcuation number of turn in coil ,if phase voltage , - a number of parallel branch.. -flux of l pole Paire , Step calculation of calculation number of turn in slot, Du=6.w/z=6,247/24=61,75,, Su calcuation number of turn .filing -Calculation of cross section of wire . q'v=Qu.fu/du=93,4×0,34/62=0,512mm q'v= cross section of the wire , .. Qu=surface.of slot. Step calculation of thickness of wire DZ=2.√q.v/π=2.√0,512/3,14=0,807,..q'v cross section of the wire mm.+/2% range of resultat picked 0,8 mm wire measure length connected of reassemble,motor ,400v,380v... 23.Requireded: an Expiremental in transformer rewinding Instructables, -step : material and tools ,step2: dismantle the core step 3un rewinding the old , secondary ,, Step determine the wire thickness , steps 5,test winding ,step 6, -purpose of rewinding of Dore keep the transformer from buzzing and to seal it form environment the lamination hard to removes measure volt , material blowtar h ,hacsaw small sharp chisel,micrometre ,balance , -requirement enamel,wire coil from transformer ,insulating varnish windings b,wind ratio 320:12=26,66 Manufacture , operation service . Requireded 25: -Generator stator rewinding:record ,gas turbine steam turbine, generator,stator bar mechanical dynamic completed rewinding of generator ,removal stator wedge and stator ,slot wall core event ,inspected tested using elcod ,glasky source , confirm material, - connection ring , installed Serie bronzed induction block Serie , Input data unit , L=1000 uH requireded index A=14,5 mm dimension .A B=2,95 mm dimension B C=6,7 mm D= 1,65mm L=4,7 mm. Slot G=0,5mm, ur=200 relatute . -number of turn N=152, effective magnetic path length ,le=18,998,Crosse section.Ae=185547 mm sq,effective core volume , Be =333,347mm cub,peak lumi by cores, IP=0,800A 24. Generator alternator and turbine repair and maintain m,c power generator house 14000 .mm sq ., 80ton to 100toneboverhear crane conditions power up to 373MVAto400MVA , manufacture quality control roles , -Electrical power generation minor and major generator . -design or type of generator stator or rotor general oven houl of any design . -modification of generator including . -rotor and stator insulator system up grade rotor and stator cooling system. -Rotor winding modification rotor and wedge iso . -completed rewinding of generator . -minor and major repairs design or type. Minor and major ,full range of testing and conditions monitoring. Full range of testing and conditions monitoring. -on site and off -site balancing fail finding and route cause mechanical power generation repair . -general overhauls of any design or type of turbine . -Diagram refurbishment pressure parts . refurbishment and replacement spare. -reverse engineering and manufacturing of components -Bearing refurbishment. -faul find and root cause analyse . -up grade and maintenances system , Scope of work compilation . -comprehsive project planning quality control and documentation completed re blading and . balancing of turbine rotor -metallurgical investigation ., And report run up down signature testing and conditions monitoring testing and conditions motor , -on site rotor repaired service. Assessment of insulation system, - insulation resistance,recurrent surge graph (Rsg) testing. -high voltage testing , assessment of coik retaining volt drop testing ,on site degassing and magnetisation. -on site stator repair service, assessment of insulation system, polarization index high voltage testing partial, discharge analyses core testing ,Elcid,power flux , engineering improvement investigation cause. Faillure design report. VA=E×I.. Requireded:copper Coil parameters calculator. -wire diameter: 0,812mm -number turn:1000turn -babbin length :25,4mm -babbin diameter :25,4 Rated DC current, turn wind ,number of winding coil diameter. Examing generator performance charactere load watt =vxa.. Measure real time,full load kW=total amp×supply voltage 1100.resweve capacity=full load ,kW x 0,25 for percent power ,generatorize,fill ,generator size,full load reserve capacity. Requireded: Number of loops: , area of each mm, magnetic field Tesla,time of rotation S,EMF induce . €:2×π×N×A×B×f×cos(2π×f×t) €:EMF inductor vole. N:number of loops dimensionnement A:area of each loop in mm. B: magnetic field f: rotation frequency.. t: time rotation. Requireded: -cross sectional area ..mm Total length of .. -resistance meter. ....ohm Resistance ...ohm Voltage rated Currnt....(v).. Power at rated current...,.w - 25.requirement: engineering electrical workers.departement.orientation .wastage - .life cycle assessment:life cycle analyse is methodology associated commercial products or services for instance case of manufacture product impact are assessed from row material extraction processing cradle manufacture recycling final disposal. -Goal and scope definition yes , an inventory analyse yea and impact assessment year , interpretation yes , - iso 14040 inventory energiw and material environment aspect iso phase of use data power plan energy control polutionn co2 dioxide , integration system model depletion asssessment commissioning . -cost of installation system engineering Cost of the cable selected and cable .total installing operating cable during. CT=CI+CL,,,,CI=cost installed length cable. CL= equivenlent the date the installation was purchased ,losses during life ,N year,cost of materials coat product manufacturers margin to determine, -Economic Conductor size involve, performing calculation neglect voltage dependence losses and find cross section.minimize the cost function, CT=CI(S)+lo.lo.(R(S).F(N)..where as function of the conductor cross ,lo=maximum load on the cable.. -E.wnwrgy semie conductor conductor cable material magnetic, destruction wastage energy maintence components. .power Zener diode power rat Calculation , input -V source 23v,vout 32v,IMAX 24ma out put Zener power rating 768 mW, resistance value -375m, resistance power rating -216m, IZr=OM/V.Z...1w/5,1v.. -Calculate battery life , Input battery life input capacity rating of battery mAh, Consumption of devices load current Output battery life. Capacity : measured in Amper hours ,the capacity of a battery can usually be found , -consumption the average current draw of the electronic device . -discharge safety the percentage that is not utilise. Equation, battery life=capacity/consumption x(i-di) Application :amount of time for battery can supply power to the circuit. Amp=1c/1s=Q/t,. I=Q/t=900/3×60=5A, Q=Ixt, ,,I{Q/t,,,Q=Ixt=3Ax90s=270 coulomb,,p=j/c,..xC/t=j/t.. Dimensionnement geometry mass energy destruction. -dure vie molecules 5ans,traitement dechet ,en combien temp Se degrade in chewingom sac plastique base matiere organique dechet degrade seulement 2semaine,1 metal rouiller integrals 100a1000 Ans pour ,plasty polystea matiere synthetic Egypt.. Conservation energy ,,transformation energy annee Lumiere 360jours ,, destruction material 100-99 force energy destruction recyclage Vieux systeme renouvellable,breaction magnetic induit reaction energetizer.xl..E,q,v -Electro energie Chauffage.. propos etude conception et fabrication resistance chaffage electrothermique, -activite: Chauffage,product et service . Service Devi's material electroteat.. 30 requireded: design analysis engineering science energy, engineering chemical, engineering physics biophysics ,science electrical energy low of conservation of energy, energy mechanical energy (KE+PE).non conservation energie mechanical. KEi+PEi+Wnc+OEi=KEf+PEf+OEF.. -kinetic energy is KE, work . conservation ,PE work done by non conservation force is Wnc , energie are included as OE equation . -Problem solving strategies ,step 2,determ the system ,step potential energie , conservation equation, KE1+PEi=KEf+PEf.. Step 4 if you know , KEi+PEi+Wnc+OE1=Kef+PEi+OEf,, -Energy of variouse object and phenomena. Object phenomenon / energy ING 1ton TNT /4,2×12.10.10.10.10. -single electron TV beam TV /4.0×10. 10 exp -15. Energy to break .. - efficiency: eff = useful energy or work output/total energy input .. Wout/Eint= -efficiency of mechanical device and activities coal fire power plant 40%, of the chemical energy in the become usel electrical energy. 60% transformer per phase less useful energy form. -thermique energy gaz. Mechanical device efficiency of the human body and mechanical device. -activity device /efficiency % Steam engine turbine generator/ 17 Gasoline engines/30 Nuclear power plan /35 Compact fluorescent ligth/20 Gas heater cresid /90 Solar cells/10. Weight fiting . -action summary low conservation of energy state that energy is process energy change form.transferred from on system Tom --when all form energy consider. KE+PEi+Wnc+CEi=KEf+PEF+PEf+OEf... Eff=Wout/Ein -Seleted solutions to problem 1,4×10 exp4.. Equation ∆PEg and ∆KE.. Obtain. v=√2gh+vo.vo=√2(9,80m/s.s×(20.0)+15m/s/)=24,/s.. 4.(a)..24x Transformation... F=ma,+mg.. h=m.c.∆t.. Hydraulic hrauelectric turbine conservation water ..thermique metering steam meter cube, .. Linearity. KE=1/2.m.v.v kinetic energy kinetic calculating..kinetic calcul. KE= O,5(30.0kg)x(0,500) KE=3,75kg..m.m =3,75.. ∆P.E to ∆.pE=m.g.h.. -∆u.p KEi+PE=KFf+REf.. Transformation energy chemito thermolonger 30.requirement : research industry.and research energy ,,electrical energy electrotechnolgy electromechanic. Vibration , stability structure Stability hyperstatic hypostatic pound noued construction stable finuculaire bridge life cycle , Instability Structure energy.electrotechnical. Phenomenon,control logic.system Plant engineering electrical science . components campagny design load. -vibration structure hydraulic pneumatic Transmission automatic vacuum regulation structure stable stress, indicator logging fault Mass spring force oscillator . ...MX"+CX"+kx=f(t). F(t)non zero setup.m is mass c is friction k ,is the springs constant f(t)..Fourie series . periodic functions k,is the springs constant ,f(t).. Fourie series period function ,f(t)=Fo×cos(wt).. XC=C1.Cos(wot)+C2.sin(wot)... Wo=√K/m naturel frequency system oscillating,Xp=A.cos.(wt).. x=co.cos(wot-y.y)+Fo/m(wo.w0-w.w) -0,5x"+8x=10(cosπ)..x(o)=O, x(o)=o W=π. Wo=√8/0,5=4. ,Fo=10,m=o,5 ,, x=C1cos(4t)+c2sin(4t)+20/16-π.π..cosπ.t -C1=-20/16-π.π..., C2=0,. X=20/16-π.π..(cos(π.t)-cos(4t).. - 2.sin(A-B/2).Sin(A+B/2)=cosB-cos ,, X=20/16-π.π..(2sin(4-π/2).sin (4+π/2.t)) - XP=At cos(wt)+B+sin(wt).tcos(wt) -practical resonance. - w=√w.w-2p.2p...or...x=XC+XP=Xtr+xsp -coupling factor Piezo electrique. KP=√25.(fn-fn).fn-fm/fn.. -frequency constant -Nt/No/NL. Mp -capacitance - CX (nf): - static displacement .um... -static voltage -v . Resonance frequency Fr (khz). Dielectric .. APC material relative dielectric constant KT , dielectric dissipation Curie point c, -electromechanical coupling factor.. Piezo electric voltage constant 1000vm/ ,young module, titanium,zirconium,quart ,note navy industrial 2×9-11Vac/mil for 840,841,VDc,at khz low field . -maximum operating temperature = Curie point 2.standard electric,capacitance+-20%.d33value +20%, frequency+5%> -30.1..robot dynamic , kinematics and control: .calculation dimensionning -nomenclature ,operator kinematics, introduction, position ,representation coordination,cylindrical,co-ordinate,linear velocity,representation of linear velocity ,Cartesian ,rotation matrics ,active,passive rotation,passive rotation elementary rotation,representation Euler angles ,axis unit quartersian , -angular velocity : Time derivative of rotation parameter Time derivative of Euler angles z,x,y Time derivative of Euler angles x,y,z Time derivative of Euler angles y,x,z -generality co-ordinate, task -space coordinator. Dynamic classic mechanic . -Matlab caD.. Operator -a×b=[a1.a2.a3]×[b1,b2,b3,]=[a]×[b]=[o,a3,a2. -a3,0,a1..a2,a1,o] .[b1.b2.b3.] Labaled 3d X(pz=(B¶,z).. Ar=(pcosπ. Psinp).. Linear vector.. AwB=ER(xR)..XP.. . --rigid body velocity and acceleration.. Task space co-ordinate corresponding effector manipulator .. Scarab robot arme..q=(&.B&.$).. Labaled -find the forward kinematics for a planar 3 DoF robot arm generalized coordinates are . ..q=(q1,q2,q3).=(&1,&,&3) And effector position and orientatator. X€(q)=(x€p(q),x€R(q)).. (X,,€R(q)=(x,z)=(i.isin(q)+I2sin(q1+q2)+I3sin(q1+q2+q3, lo+I11cos(q1)+I2 cos(q1+q2)+I3 cos (q1+q2+q3) X€R(q)=X €R(q)=q1+q2+q3... Programme intelligence artificial.. System robot language machine data -function : ph get + elu angx z,z from rotation matrix (c)... % GETEULANGXJZ. Promotion matric (c) extract x.y.z.euler angle frame. %rotation matrices . % author (). X=atan 2(-c(2,3), c(3,3); Y=atan 2(-c(1,2),c(1,1)); Ph=[x y z]; 30.2 requireded: industrial research means planned, research criteal inovation,grow equity component campagny appliance STI stick report equity equipment ,input executive,summary project manufacture Trade report quality consumer.appliance. Fridge.tv.stove,ion ketle stick proliferation report project manufacture.report diesels energy metering quality manufacture dtic marketing... Industrial research high quality components. 30.requirement : research industry.and research energy ,,electrical energy ele 32 requireded: total Change in energy of system -∆U= final poten energy , initial potential energy, ∆U=-l∆×t×V -(=∆q/∆t).. Total kinetics energy of the system low conservation, u= kinetic energy, kinetic energy=l××∆t Conductor in electric field gradual energy , collision the charge total charges vibration of atome Conductor heat energy Conductor, P=E/t. -energy (e) ability to a working done=energy spent power (p) -meant ..dp./dt . .d / DT (m.v) Solve equations ... L.di/DT +R.t.=E 'cosw.t... dE.dt=0 .. demonstrating pendulum force..energy pandulum U=m.g.h --dE/DT=-&L/&t. Partial derive l.partial time.. £=P.atct .. forcing function constant t =Rtcy and forcing function is f(y) {CTD , second order differential ,x(t) , velocity acceleration ,,,DX/DT ..y(t),=Cewt+De-wt -advanced measurements approach methods ,topics energy measure , discretion verification: advanced and complex energy systems monitoring and control KPI based on integration of the active power apparent power active . --power average. Pave=∆w/∆t.. instaneouse. P=dw/DT..rate of work . W= P∆.t power during interval varies W=int. p.dt work transformer... P=dw/DT =F vect.×dr/DT= F×(dr vect/DT) =F vect.×v vect.... --dw=F vect.dr vect=|Fvec||drvec|×cosπ .. WAB= int f vect .dr .. Wfr=-f Ind k k.. W Grove AB=-mg (yB-yA)... W.spring A.B=((-1/2k)(x.xB- exp..)... P=dw/DT..... P=dE/DT.. W=int π -π[p.dt - requireded supplies: engineering electrical energy how to calculate voltage regulation of distribution line. -introduction to voltage regulation . -voltage regulation for 22kv,22kv,33kv overhead,. -permissible voltage regulation . Voltage regulation value requireded size capacitor . -voltage regulation for 11kv22kv,33kv overhead line % voltage regulation. =(1,06×P×L×Pf)/(LDF×RC×DF) P -total power in KVA, L-total length of line from power sending to power receiving in km -pf- power factor , RC regulation constant (kva-km) per 1% drop , RC= (KVA.kv×10)/(Rcos$+xsin$).. LDF=load distribution fonction. LDF=2 for uniformly distributed load on feeder ,LDF >2 If load is skewed toward the power toward the power transfo -maximum voltage regulation at any paint.. Part of distribution system,urban area %,sburba%, -up to transfo ,2,5. 2,6 -up to service drop ,0,5! - voltage regulation values voltage variation in 33kv and 11kv feeder limit, -above 33kv (-) 12,5% to (+) 10% -up to 33kv (-) 9,0% to (+) 6,0% - in case is difficulties to achieve the desired voltage rural then ,11,10,433kv.. Distribution transfo place 1110,4.. Requireded and size of capacitor: Cos$,to cos $2. - optimum location of capacitor,L=[1-[KVARC/2KVARI)×(2n-1). L- distance in per unit a long the line from sub station varc ,size of capacitor bank sub total Voltage rise due to capacitor installation %voltage rise=(kvar(cap)×LxX)/10xv×2.Kva cos capacitor reactance per phase.,l length of line mile ,v phase to phase voltage in calculate% voltage regulation of distribution line ,calculate drop and % voltage trail and of 11kv distribution system. System have acts dog Conductor (A16/472,G7/1,57) - current capacity of acsr, conductor=2050Amp Resistance=0,2793, reactance=oohm.. Permissible limit of % voltage regulation at trail ..load b Methods base voltage drop=((√3(Rcos$+Sin$)×1)/(Noof conductor phase x 1000))×lngth of line. Voltage drop at load A,load current at point A(1)=KW/1,732×volt×pf. -load current at point A(1)=1500/1,732X1100x0,8=98amp.. -required no of Conductor , 2phase =98/205=0,47... Am =1No -voltage drop at point. A=((√3x(Rcos$+xsin$))x no of Conductor phase x 100))×length of line Voltage drop at point . A=((1,732x(0,272xo,8+0xo,6)×98×1×1000)×1500)=57volt.. Received and voltage drops=(1100-57)=10943 volt voltage regulator point A= sending volt receiving end volt)×100% voltage regulation at point A (11000-10943)/(20943)×100=o,5 32. Requireded: load current at point B(l)=kW/1,732x volt xpd. -load current are point B(l)= 1800/1,732×1000×0,8=118Am -distance from sources= 1500+1800{=3300mwter. Voltage drop at point B=(√3×(Rcos$+sin$)×1/no of Conductor / phase × 1000)×length of line . -voltage drop at point B = ((1,732×0,272×0,272×0,8+0×0,6)×98/1×1000)×3300=266volt. Received end voltage at point B= sending end voltage drop =(1100-266)=10734. % voltage reg at point . B=.((Sending and volt - received B=(11000-10737)110734)×100=2,48 -voltage drop at load cload curent at point cc kW 1,73x volt xpd .. Load current at point c(l) 200/1,732×1000×0,8=13 amp . Distance from sources. 1500+1800+2000=5300 metre . √3(Rcos$+sin$)×1/(No of conductor length of line. -voltage drop at point. C=((1,732÷(0,272×0,8÷0,6)×98)11×100)×5300=269volt. - receing and voltage at point . C=sending end volt-voltage . Drop =(1100-269)=1073 voltage regulation at point ,c= sending end volt-voltage receiving en volt at point = ((11000-1073)/10731)×100=2,51% Interpretation design single line diagram SLD complex projects.. -Mathematics mean power Harmonic H..mean H=M1(a,b), Geometry mean G=Mo(a,b) arithmetic mean a A=M1(a,b).. Minimum.. M.inf (X1.....xn)=Lim mp (X1... X).. Harmonic mean M-1(X1.....xn=n/1/x...+1/xn Geometry Mo(x1... Xn)=Lim .mp (X1....XP) ...p>O M-1(X1....xn)=X1+.... Xn/n M2(X1...xn)=√x1.x2+..xn.xn/n Cubic mean M3(X1....xn=3√x1,X1,X1+.....x1.xn./3.. Maximum M+ inf (X1....xn)=Lim mp(px.. .. single axis arm designed with an ultrasonic motor basic active /passive torque control - basic servosytem. Control mechatronics energy. T(k)=KP[¢d-¢(k)] Servosytem manipulation , binairy , servomotor angle calculation . Servo microsecond stage . Priority encode logic .. to 34.required engineering electrical faculty Patronage. Engineering construction electrical : Construction principle electrical theory learn . association constructor automobile ,nor vde constructor electrogenmotor Panel wiring control electrical ,mechatronics , building electrical design installation. Plaque signal number constructor Manuel hand book previous building plan architecture: building components Schematic geometric architecture electrical electronics code norm .. Construct power factor material .heater temperature line load .. inspection find fault rules installation building License building infrastructure electric municipality planning.. --trade electric engineering manufacturing theory design trading Workshop workplace component construction skill in job material inspection employee creation engineering architecture.mode emploie operationel basic advanced job applied energy inspection trading relate court low ..trade test certificate licence trade theory job low rules -engineering electrique foundamental system process low studies integrite analysis investigation design device integrity subject trade and science engineering.electrical engineering analysis component need work fundamental assistance study calcule council association job government. Summary study case trade Nated and infacture constructor creation subject energy career generation power station, electrotechnolgy.mathematic.science - requireded: electrotechnic ,electrotechnolgy ,technology electrique,schemat electric, Generalite Sur un appareillage , introduction , fonction de l 'appareillage , Le sectionnnemt ,la command, protection, classification de l'appareil,choix l 'appareillage, caracteristique technique d'un appareillage electrique , tension assigned d'emplloie,(UE), tension assigned de d 'isolement (UI),tension assigned de tenue aux choice uin , Courent thermique convention ,l air (lth),courant assigned d 'emploie, pouvoire assigned de Ferme, pouvoire assigne de Ferme, pouvoire,assigner de coupure,durability electrique, protection de l'appareillage ,indice de protection IP ,indice de protection IP,indice de protection ok ,class des material electrique, - to 01 Engineering electrical deal science electric electrostastic creation system fundamental electromagnetic power station substation field movement electrostatic dynamic networks nated diplomat n saqa generator transmitted. -electromechanical application deal technique electrical EIC commission, specifical diplomat symbol circuit power station substation electrotech commission. -constructor electric deal building electric deal building electric support architecture support.architecture diploma line vector saqa component. --trade electrical deal diploma workplace worstand certificate power station compagny trade basic. -tradel labour skill electrical workshop place. -engineering electrical Nated Isat integrite trade skill power station subject magnetic workplace theory diplomat . -professional development. Engineering electrical electrical lab work shop mettering amp wat volt Ave machine power station Consultant calcuation kWh,metering power station substation conception. -electrodynamic,charge electrostatic kWh index take by electrical technology, Calcul , U.l.sin t Amplitude cinematic charge move electromagnetic reactance. Engineering electrical trade metering components electrodynamic work.creation electrostatic theory engineering point fixing installation infracturevinfracture Db box Diplomat evaluation career total license certificate national trade LOCATION: Division: Technology Management Services: (Pretoria) REFERENCES: TMS 36/2019 (1 post) Generic Requirements: • Applicants must display competency in the post-specific functions of the post; • Be in possession of a Senior Certificate (Grade 12), • Be a SA Citizen, • Be fluent in at least two official languages, of which one must be English; • Be in possession of a valid light motor vehicle driver's licence. Must have no visible tattoo/s when wearing summer uniform. • Must have no previous convictions or pending criminal/ departmental cases pending. • Applicants will be subjected to a vetting process which will include security screening and fingerprint verification. • Organizational skills. Computer literacy (MS Word, MS PowerPoint and MS Excel) will serve as an advantage. Additional Requirements: • An NQF 6 in Electrical Engineering or NQF 4 certificate or equivalent with minimum 2 years' experience in the field of post or National Technical Certificate level 3 (N3) in the field of Electrical Engineering light current / telecommunications (Electronics) with minimum 2 years' experience in the field of post or NQF 3 certificate with a minimum 5 years' experience in the field of the post. • Having successfully completed the following courses Radio Installation, Frequency Modulation Principles and Basic Electronics (applicable to all applicants except applicants with NQF 6 in Electrical Engineering). • Must be willing to work with heights. • Trade Test in the field of the post and/or certificate in fall arrest / rope rigging will be an added advantage. Core Functions: • To conduct repairs, installation, removals and maintenance of radio equipment for the SAPS Radio Technical Unit. • To do radio infrastructure installations at SAPS Radio High Sites. • To conduct preventative maintenance at SAPS Radio High Sites. • To work and perform operating test equipment (Communication Monitor, Signal Generator, Oscilloscope). • To analyse and trace radio infrastructure faults. GENERAL: •Only the official application form (newly developed form is available from all police station, on the SAPS website www.saps.gov.za and at the SAPS Recruitment offices) will be accepted. All instructions on the application form must be adhered to and previous criminal convictions must be declared; failure to do so may result in the rejection of the application. The post particulars and reference number of the post must be correctly specified on the application form. •Persons who retired from the Public Service by taking a severance package, early retirement or for medical reasons, as well as persons with previous convictions, are excluded. •Comprehensive Curriculum Vitae must be submitted together with the application form. •Certified copies of an applicant ID document, valid motor vehicle driver's license and all educational qualification obtained must submitted together with the application form Bid invitation receiving OTENTIAL SERVICE PROVIDERS ARE ENCOURAGED TO USE THE INDICATED URL LINK FOR THE DOWNLOAD & PRINTING OF SOUTH AFRICAN POLICE SERVICE PDF TENDER DOCUMENTS - http://www.etenders.gov.za/content/advertised-tenders/ note contractor acceptance e saps scm /maintenance Contract nr Description Published date Closure date (@11:00) Bid Document Yes/not APPROVAL OF SERVICE OF AN APPROVED INSPECTION AUTHORITY (AIA) TO PERFORM OCCUPATIONAL EXPOSURE LEVEL SURVRY IN TERMS OF THE OCCUOATIONAL HEALTH AND SAFETY ACT 85 OF 1993 AT THE DIVISION: DETECTIVE AND FORENSIC SERVICES FOR COMPONENTS: CRIMINAL RECORD AND CRIME SCENE MANAGEMENT AND FORENSIC SCIENCE LABORATORY NATIONALLY FOR A PERIOD OF THREE(3) YEARS Contract data service, Maintenance and Repairs - The successful Bidder shall carry out five (5) and six (6) monthly services for the contract period. Thirty department of science and innovation socio economic development, -1 .programme administration technology innovation international cooperation Gov , city power and St peace college Programme, exposition science -2.programme research development support : St peace college lecture and learner development under planning. Department high Education vs saqa vs qcto,vs seta research resolved time table examination Assessment police , Portfolio documents systems integrity police academic, -2.1. Purpose: innovation practical and theoretical. science and technology science national trade factor outcome time table trading examination and qualifition framework national diploma n engineering and council trade sector authority , innovation system outcomes empower system subject entry phase learning and lecture teach science exhibition generation technology Assessment police ,and Engineering assessment trade machine and trade control system process project system control evaluation system 2.1.2 knowledge: innovation practical and theoretical trade technology electrical engineering Electrotechnolgy empower value are recreation orientation maximum, value tax , return studies and Examine electro technology engineering time table assessment Completed research laniaries system technology value entry lecture exam nated vs. saqa vs qcto linearism system electro technology power fundamental job duty job maximum, job value minimum trade operational, task minim component system, -Job duty cycle system value : learner lecture framework qualifition and occupation trade job value salary resource human maximum fiscality minimum technology components system : sciences natural system investigation design minimum agreement value job trade module,task minimum ,task minimum service require trading sectors and maximum sectoral electrotechnology trading components Value financial tax system: 2.2.3: strategies: strategies phasing module tasking curriculum system implantation levels grading lecture objectivity: The trading lecture and learning system engineering science electrical subject and technology electrical ,electro technology ,education technology System outcome , trading education technology systems power factor demand system education , efficiency system assignment power objectivity module task , maximize inventories psychopedagogie metric system month week of observations learner form test assessment assignment control tpm maintence meeting product control technology goal . -1.2.3.4: development humain generation: system teaches sector organisations technology rate value maximum rate demand factor admnise value ask required report system value. -1.2.5.component: trading lecture used company manufacture relate system Industrial Education system intelligence management system information ,education computing control system switch and material support command disposition component manufacturers Numerical time table framework regulatory Education trade relate handbook guideline information and orientation integrative system component handbook relate maintenance update , upgrade system -1.2.6: basic science infrastructure: implantation of research innovation mission equipment College equipment framework theory practical lab workshop workplace implantation department gov system ,more Inovation,tax incentives,, Meeting request -National energie regulatory of South Africa mandatory electricity piped , invitation me minister tribunal,, Meeting electrical conformance board design installer regulatority Cox competition b Meeting salt .dmrg stick ,sale revenue power plant fuel used national treasure sars department of energy mandatory ensure private sector participr in power generation , Meet national skill fund,, national research fund ,, Visa permit Learner Name (s): __tshingombe tshitadi___________________________________ Grade(s): _______12/ ___, n6 _ School Name: __st peace collge ___________________________ _Region: gauteng __________________________ Project Title: __the implementation framework circulum knowledge circulum policy engineering planing product improvement contractual agreement with register trainer and consultant engineering electrical and computer science engineering 1.abstract : the implementation framework circulum knowledge circulum policy engineering planing product improvement contractual agreement with register trainer and consultant engineering electrical and computer science engineering static material drawing need discovery Channel partner ways together with the quality plan on being there for system need system generated undergoing next year's and analyse to zero loadshedding or Rental system information recommand theory practice of anticipating dangers social media teach the innovation define city power municipality government institutes city jhb delivery matter supply public and private urbanization energy electrical , And define Eskom entrepreneurs commission delivery society government industrial delivery public private energy electrical commissioner . .the school and college institutes private public define by Education department teaching learner science engineering apprentice and training and assessment of learner intellectual -need or problem defined : the research implementation problem need to resolve discovery rural and actually technology innovation industrial to integrate system to standard system knowledge support natural sciences design generated analyze combined sheet from school assessment Portfolio college career outcome Assessment information formative and Summative to workplace workshop mentoring components system to be improved or functionnning to the municipality and entrepreneurs industrial to promovate graduation in workplace. -research questions: Ask factor job career outcome transition phase learner phase exhibition phase teach beginning, intermediate,seignor get college junior cadet minim functions graduate chief post generation size industrial , development outcome machine industrial problem industrial maintenance support, manufacture support technical science actual system machine computer system news technology robot science energies need career outcome integration human and material support to resolve demand factor in humans size outcome tendered bid and material resource capacity product integration. to resolve team timeframe operational system month daily diary 2.Purpose: Ask factor job career outcome transition phase learner phase exhibition phase teach beginning, intermediate,seignor get college junior cadet minim functions graduate chief post generation size industrial , development outcome machine industrial problem industrial maintenance support, manufacture support technical science actual system machine computer system news technology robot science energies need career outcome integration human and material support to resolve demand factor in humans size outcome tendered bid and material resource capacity product integration. to resolve team timeframe operational system month daily diary , -research time frame : Project ,importance time frame allocation time table research engineering and science electrical implementation break time load shedding time industrial loss gain resource human material energetic ,time table adaptation system team synchronization, asynchronous system regulation time table periodic alternative or direction energy production system cost metering production human time frame to resolve movement frequency response of team step task project in the structure, resonance learner ,metering learner teacher, resonance learner and system robot actually must be synchronized s 3.Method : METHOD: MATERIAL AND EQUIPMENT: methology specific guidelines assessment formative Summative rebruc,tools assessment learner and teacher ,time table allocation file student file school..workers file employment database file training job and emploie job , humain. Material stationery information Manuel and automatically system machine laptop computer ,panel system ,design,execise book log book, journal account book, drawing sheet book,office documents wallet book,bank card register office database employment book, need, Engineering electrical material,panel projection permit office workplace register government industrial register social,policy defense security register logistics support, space power. Electrical generation transmission,distribution metering measure tools ,robot it system Port USB , Panel, equipment scaling.office study. 4.Results: nano technology and mining , wath is natechnology , wath are the danger of mining,how is nanotechnology being used to make safe , activity,2,3 .. -nanotechnology and energyb,where does ours energy come from,non renewable and renewable energy source ,how can nanotechnology help to build better solar panel , activities,1,2,3:.. .nanometre.. - the are used nano technology science very small ,object ,,.. .. ..discy, .. - apparatus , investigation, write an investigation Questions, write a hypotese for your investigation, procedure for the investigation ..make sure that your hypotheses give a clear idea of step you need , - connect your equipment so that you have build circuit shown diagram, beginning by including as completed the circuit observe brightness of the ligthbub, now,observe the brightness of the ligthbub with this shorter length,, torch ,wire pencil lead,wire,, now decrease the length pencil lead that has been included in your circuit once , observe the brigth of the ligthbub with this shorter length of pencil lead ,record your observations, -analyse your data. Assume the brigthness current and resistance do you notice from observations, -Write a conclusion. Write a clear conclusion to your investigate.. Activity: Describe the mining danger ,, -activity : in group of 5 ,6 learner design and draw a poster showing how nanotechnology is being used to build gas sensors for mines, - make your poster as clear and colourful as , . - you teach will assess your using criteria. - poster is colour and creative , 2 marks,poster shows original idea 2 marks, poster is clearly presented , 2 marks,information on poster is informative. 2 . 5. Conclusion : Engineering it... discovery Computer , training , development and support services to existing or prospective , club house safe creative space to learner aged ,prepares learners for full participation in the 4IR and provide exposure to coding ,robotics ,sebt development, graphic design,3 d design ,2 D and 3 D modelling, animation,video production, basic computing , virtual art , year full time development program 180 unemployment youth aged training including cisco,it Ccma ,ccna security Linux,IoT ,C,C++ , python , essential skills and career readiness, instructor training centre essential ,ccna routing and switching ,ccna security ,ccna cybersecurity operation,to existing or prospective , custome accreditation custome 3,_4 day module ,word,excell,access,Nd power point ms office,speciistr training,it also digital literacy, skills, certiport examination ms office , specifical, delivery fundiy depending learner full standard ,.. University. Undergraduate, how do you conscientise students about 4 in their learning ,reality ,Google self driviy, - what about the research output research , ..where are you going create new facility . - complementary roles engineer, design inovate ..role in perspective, , Career psychological services focus counseling therapy psych education ,career resource ,CV job interview gradust, Eskom Expo for Young Scientists RESEARCH PLAN 1. Research Plan Templates for: 1.1. Scientific Investigations Projects/Experiments 1.2. Engineering Type Projects and Computer Science Projects • For these types of projects, • a design process is followed according to criteria, to build and test-redesign-retest a prototype/product/solution e.g. a device or a computer code 1.3. Social Sciences Projects • Social Sciences research involves an objective and systematic method of exploring and analysing human behaviour, social issues and other phenomena. It involves collecting qualitative and/or quantitative data 1.4. Mathematics/Theoretical Projects • Mathematics projects explore quantity, structure, space and change. Starting with an observation, problem or question, make conjectures/hypotheses, prove your claim using new or existing methods, make valid deductions and test your ideas theoretically. Your reasoning and arguments must be logical .2.2 SCIENTIFIC INVESTIGATIONS/EXPERIMENTS NAME:_tshingombe tshitadi____ PROVISIONAL PROJECT TOPIC:__________________________________ PROVISIONAL EXPO CATEGORY:_________________________________¬¬_ - NAME : TSHINGOMBE TSHITADI -PROVISIONAL PROJECT TOPIC: IMPLEMENTATION FRAMEWORK POLICY COLLEGE AND SCHOOL ENGINEERING CIRCULAR ASSESSMENT POLICE EDUCATION TECHNOLOGY TEACH AND TECHNOLOGY ELECTRICAL SUBJECT SCHOOL QUALIFICATION LEVEL IN ENTREPRERSHIP AND INDUSTRIE SOCIETY COMMISSIONING AND GOVERNMENT MUNICIPALITY TEAM TRAINING WORK GRADUATION ENGINEERING TIMEFRAME .ST PEACE COLLEGE SCHOOL ORIENTATION GUIDE MANUEL POLICY -PROVISIONAL PROJECT EXPO CATEGORY..: - INTRODUCTION: 2.3 Introduction 2.3.4 Literature review: ?Define concepts/definitions .What are the benefits/significance of doing this research/who will benefit? 2.3.4 Problem Statement: What problem/issue will you be addressing? 2.2.5 Research question(s):). Aim: What is the aim/objective of this research project? 2.2.6 Hypothesis: Variables: List the independent, dependent and the controlled/fixed variables 2.2.7. Method Materials Procedurend record the data? Data analysis: How will you analyse the data? Ethics Safety Time Frames 2.2.8 References . Teacher’s/Mentor’s comments and suggestions: Teacher’s/Mentor’s name, signature and date: ENGINEERING TYPE/COMPUTER SCIENCE PROJECTS NAME: ___________tshingombe ____ PROVISIONAL PROJECT TOPIC: __________________________________ PROVISIONAL EXPO CATEGORY: _________________________________¬¬_ - NAME : TSHINGOMBE TSHITADI -PROVISIONAL PROJECT TOPIC: IMPLEMENTATION FRAMEWORK POLICY COLLEGE AND SCHOOL ENGINEERING CIRCULAR ASSESSMENT POLICE EDUCATION TECHNOLOGY TEACH AND TECHNOLOGY ELECTRICAL SUBJECT SCHOOL QUALIFICATION LEVEL IN ENTREPRERSHIP AND INDUSTRIE SOCIETY COMMISSIONING AND GOVERNMENT MUNICIPALITY TEAM TRAINING WORK GRADUATION ENGINEERING TIMEFRAME .ST PEACE COLLEGE SCHOOL ORIENTATION GUIDE MANUEL POLICY -PROVISIONAL PROJECT EXPO CATEGORY..: - INTRODUCTION: Interview ask Introduction ? Need or Problem Defined: it? Research question(s): and guides the method section. It must be clear, concise and specific (must not be a Yes or No answer). Aim:? Engineering Goals or Design Goals or Algorithms: Method Materials: List the materials and equipment you will use. Procedure: Data analysis: How will you test the prototype/solution and record the results? Preliminary Designs: Include labelled diagrams (include scale, measurements with units) of the first prototype/solution and descriptions of the design ideas. Ethics Safety If you do not have any potential safety issues, leave section blank. Time Frames Poster? References Teacher’s/Mentor’s comments and suggestions: Research. Career, Eskom, city power municipality , department education, science expo,college institutes school., project 1.RESEARCH PLAN: - ENGINEERING TYPE,AND SCIENCE COMPUTER - NAME : TSHINGOMBE TSHITADI -PROVISIONAL PROJECT TOPIC: IMPLEMENTATION FRAMEWORK POLICY COLLEGE AND SCHOOL ENGINEERING CIRCULAR ASSESSMENT POLICE EDUCATION TECHNOLOGY TEACH AND TECHNOLOGY ELECTRICAL SUBJECT SCHOOL QUALIFICATION LEVEL IN ENTREPRERSHIP AND INDUSTRIE SOCIETY COMMISSIONING AND GOVERNMENT MUNICIPALITY TEAM TRAINING WORK GRADUATION ENGINEERING TIMEFRAME .ST PEACE COLLEGE SCHOOL ORIENTATION GUIDE MANUEL POLICY -PROVISIONAL PROJECT EXPO CATEGORY..: - INTRODUCTION: the innovation define city power municipality government institutes city jhb delivery matter supply public and private urbanization energy electrical , And define Eskom entrepreneurs commission delivery society government industrial delivery public private energy electrical commissioner . .the school and college institutes private public define by Education department teaching learner science engineering apprentice and training and assessment of learner intellectual -need or problem defined : the research implementation problem need to resolve discovery rural and actually technology innovation industrial to integrate system to standard system knowledge support natural sciences design generated analyze combined sheet from school assessment Portfolio college career outcome Assessment information formative and Summative to workplace workshop mentoring components system to be improved or functionnning to the municipality and entrepreneurs industrial to promovate graduation in workplace. -research questions: Ask factor job career outcome transition phase learner phase exhibition phase teach beginning, intermediate,seignor get college junior cadet minim functions graduate chief post generation size industrial , development outcome machine industrial problem industrial maintenance support, manufacture support technical science actual system machine computer system news technology robot science energies need career outcome integration human and material support to resolve demand factor in humans size outcome tendered bid and material resource capacity product integration. to resolve team timeframe operational system month daily diary , -research time frame : Project ,importance time frame allocation time table research engineering and science electrical implementation break time load shedding time industrial loss gain resource human material energetic ,time table adaptation system team synchronization, asynchronous system regulation time table periodic alternative or direction energy production system cost metering production human time frame to resolve movement frequency response of team step task project in the structure, resonance learner ,metering learner teacher, resonance learner and system robot actually must be synchronized slot frequency, control loop wizard register access card system movement personal in out robot system entrepreneurs synchronization system. speed level up date need to control by human robot system technology. -Aim : overview : in the review system career learner induction or error implementation framework regulatory mandatory learner human resource in time time frame must adjustable system and resolve registered system administration standard synchronization and stability adaptor system delay register , model rwin city ,wring commission adapted illegally institutes or college need to training system and adapted in system upgrade update register circular policy engineering planning, - Engineering goals: Design , facilities learner Engineering entry model ,years learner up date ,up grade years 2023 to 2018 in college up date and new institutes and news outcyactual tendered job city. Class model grade 1 to grade 12 level n 1,6 college level , university level , N1 to n6, NQF 1,nqfto 3 qualifications framework n engineering, grade occupation certificate seignor council certificate Engineering, category, frequency term 1,2,3,4 semester move file Portofilio assessment student register Poe's docket case indicator job logine , compare scaling,compare ,comtency rating , Synchronous induction learner speed slot intellectual quotient learner entry exhibition, efficiency learner ,average, Probability learner gate job integrity post learner Portofolio learner award learner , probably learner job equity engineering and electrician daily meeting. More less .induction error proefficuence more , Goal close tendered minimum graduat learner posted salary recruitment post , maintenace poor, ,-algorith achieve , probably. - METHOD: MATERIAL AND EQUIPMENT: methology specific guidelines assessment formative Summative rebruc,tools assessment learner and teacher ,time table allocation file student file school..workers file employment database file training job and emploie job , humain. Material stationery information Manuel and automatically system machine laptop computer ,panel system ,design,execise book log book, journal account book, drawing sheet book,office documents wallet book,bank card register office database employment book, need, Engineering electrical material,panel projection permit office workplace register government industrial register social,policy defense security register logistics support, space power. Electrical generation transmission,distribution metering measure tools ,robot it system Port USB , Panel, equipment scaling.office study. -PROCEDURE : description Learner and teach , Education design technology support science ,and enysupport, - team step task operation activities career, Relate argument statement button Operationel preliminary task.method motivation automation ,register system input output student workclass scaling class career class ,yes statement class yes, implementation print and yes , workplace Eskom or city power available learner place yes synchronisation or inspection department education or labour gov yes adapted system accountability yes restore file system yes , , relay delay yes compare yes test control loops system yes flip file equity and statement post yes, teach system yes up date course lecons activity yes compare resolution certificate yes occupation yes qualifications yes compare systeme, questions custome system ask resolve yes meet yes training ask component framework yes activate yes implementation yes system restore maintence support system, Data systems collect and memorise award. -ETHIC : completed safety. Circulum policy framework regulatority,quality council trade council engineering, circulum policy, Education regulation regularity irregularite material fault default, insurance quality , Health injury or health time frame synchronisation,asynchronous learner , network transmission,generation distribution system synchrone,real time , images time frame safety,time frame framework stability learner , induction learner error learner outcom no meeting or learner gate damage system or break time table material stationery workplace college affect workplace industrial and municipality breakdown job injury body or robot system industrial registration move inactive receive message or not send or not incomplete,support no survey real no arrival place asynchronous 2.LITERATURE REVIEW -time frame : project work plan Plan orientation industrial and supervision. . orientation industrial : schedule project shift days night Management supervisor Humain resource Management system information Legal practice Date : State,: post : - teacher ' mentor comment and suggestion: -3. ABSTRACT: the implementation framework circulum knowledge circulum policy engineering planing product improvement contractual agreement with register trainer and consultant engineering electrical and computer science engineering static material drawing need discovery Channel partner ways together with the quality plan on being there for system need system generated undergoing next year's and analyse to zero loadshedding or Rental system information recommand theory practice of anticipating dangers social media teach, -Name : tshingombe - school name : St peace college. - grade : 12/ level 6,n 6 Region Gauteng. - PROJECT TITLE: IMPLEMENTATION -ABSTRACT : -PURPOSE: -METHODE:. -project management: building for scientific mentor, school, - views school attending, Project submitted. - customer used. - application award certificate . Grade expose youth. - project creating . - school management projects Development companies. - social, science. -agricuture animal, prody agriculture, Biomedical chemistry analysis, - computer data management data science network,St earth science , atmosphere ,climate science,energy, productivity, engineering, biomedical, engineering chemistry, math, algebraic ,plant sciy, physics, astronomy,science,matter,science ,matter ,optic, -Types of project: scientific investigation: reseat questions and a hypotese, observations and , - it involves Colle , - engineering computer design , process , according,criteria,build test redesign,retest proto, -mathrmatic, theoretical, Print explot, - quantity hypothy - creative identify what. - interest focus specii topic - determy significant, value. Topics literature review. Creating ,ethic ,response research plan , Project book, Take pictures. 2. Teacher mentor name Teach engineering/ and Education technology. News are Cree city and commission Teach engineering youth Reflections daily Career mentor -lesson plan: -Nano technology and water What is nanotechnology, How small arbobject nano technology, Where does our water come from , How can nanotechnology make safe to drink. Activity 1,2,3 extension activity. , -nano technology and mining , wath is natechnology , wath are the danger of mining,how is nanotechnology being used to make safe , activity,2,3 .. -nanotechnology and energyb,where does ours energy come from,non renewable and renewable energy source ,how can nanotechnology help to build better solar panel , activities,1,2,3:.. .nanometre.. - the are used nano technology science very small ,object ,,.. .. ..discy, .. - apparatus , investigation, write an investigation Questions, write a hypotese for your investigation, procedure for the investigation ..make sure that your hypotheses give a clear idea of step you need , - connect your equipment so that you have build circuit shown diagram, beginning by including as completed the circuit observe brightness of the ligthbub, now,observe the brightness of the ligthbub with this shorter length,, torch ,wire pencil lead,wire,, now decrease the length pencil lead that has been included in your circuit once , observe the brigth of the ligthbub with this shorter length of pencil lead ,record your observations, -analyse your data. Assume the brigthness current and resistance do you notice from observations, -Write a conclusion. Write a clear conclusion to your investigate.. Activity: Describe the mining danger ,, -activity : in group of 5 ,6 learner design and draw a poster showing how nanotechnology is being used to build gas sensors for mines, - make your poster as clear and colourful as , . - you teach will assess your using criteria. - poster is colour and creative , 2 marks,poster shows original idea 2 marks, poster is clearly presented , 2 marks,information on poster is informative. 2 marks, group work learner were included 2marks ,total 10 marks. 2.how to build yourself a bright technical future. - considering a technical career,.. - let s get down to work , - how do I pay for .. Technical and artisanal not so low skilled job fact skilled, Revolution age material age skill.. Myth and facts about technical careers . Myth choosing a technical course will lead a low paying job , career regards status compare,gate stuck on your career ,technical career are not for women ,is dirth work,there is not room for creativity in technical career Fact : a well qualified technicians or artisan is high demand and will earn good salary , need RSA job technical low, women do justas these career, workplace need clean , Engineering challenge are practical problem and many need creation nthar where qualifirv,, .are you fascinated by how something,piece make it up together,do you prefer to make things instead of reading aboutg ides ,doubyou enjoy solving puzzles and problem,does working in team make happy ,would you like to run your business ones day a career as artisan or technicia ,, mechanitechnique , electrical,civilengineering technologist , Let see what you are good at , it can difficult to decide what your are good at what career you want doing is to use a theory designed, six broad type, realistic,investigative,artistic ,social,entreprise, conversation, occupation personel, -Are you realistic,are you pracal, CA you fix electrical things,do like explore machine, wath score -are you investigative , are inquisitive ,can you things abstractly, do you like to explore ides,,analytical solve math problem use computer wath score, - are you artistic are you creative , sketch draw or paint all ,solve problem in original way, intituive ,use intutii.read stories,play and poetry,imagine,,are you social are you friend can you teach or train other,do like to use social or interpersonal,are you enterprises,are you self confidence,star project ,do you like to make that affect, - so what now ,how do you get there , Registered Education institut NQF qualifications. Career career Pathways, ,school need subject ,wath exactly the Engineering technology field ,electrical,career pet for part.. - birthday planetarium, science activity, ,erupting apples, planetarium show,science show, graphite circuit Climbing wall package, Subject in the national curriculum statement grade ,10-13.. Learning field ,elective subject, you need to have selected subject, subject refer to the , -comulsory subject ,home language n,first language,pure math , Human social studies ,physical computer, business comeerce managent ,service manufacture eny, design technology, electrical technology,eny graphics design,mecanic Engineering it... discovery Computer , training , development and support services to existing or prospective , club house safe creative space to learner aged ,prepares learners for full participation in the 4IR and provide exposure to coding ,robotics ,sebt development, graphic design,3 d design ,2 D and 3 D modelling, animation,video production, basic computing , virtual art , year full time development program 180 unemployment youth aged training including cisco,it Ccma ,ccna security Linux,IoT ,C,C++ , python , essential skills and career readiness, instructor training centre essential ,ccna routing and switching ,ccna security ,ccna cybersecurity operation,to existing or prospective , custome accreditation custome 3,_4 day module ,word,excell,access,Nd power point ms office,speciistr training,it also digital literacy, skills, certiport examination ms office , specifical, delivery fundiy depending learner full standard ,.. University. Undergraduate, how do you conscientise students about 4 in their learning ,reality ,Google self driviy, - what about the research output research , ..where are you going create new facility . - complementary roles engineer, design inovate ..role in perspective, , Career psychological services focus counseling therapy psych education ,career resource ,CV job interview gradust, to purpose: 3 ,,phase synchronous machine an electromechanic energy conversion device operate speed of rotating magnetic field , synchronous machine ,bases energy, synchronisation generator, , NS = 120f/ p , number of poles the machine , Work.principlr, -key features, synchronous motor do not starting self , synchronous machine double excited machine because it requires two input supplies ones stator , synchronous machine,operate at constant speed, called , syncy generator can produce voltage magnitude ,machine lagging,leading unit, syncy motor voltage : equation of synchronous motor, V =En+Is(Ra+jxs)., - v = voltage Police ,En back end , I a armature current ,Ra armature resit, resultant voltage difft between the voltage applied V,and back EMF, Internal angle, ER, and tan @= X's/Ra..,back EMF generated , En= ka.alpha,NS.. En=v normal excitation, logging power factor, input power : input power synchy motor is given pin = v.la.cos ,,,pin = √3.v.L.I cos ,where ,, .mechanic power in motor ,Pm=Eb.la.cos (a- alpha) ,,,Pm= Pin - Is.Ra..Pin= √3.VL.I.L cos ..is load angle.gross torque,synchry,speed , stepper motor ,B= Ns-Nr/NsxNr)*360..step angle of rotation ,ms = number of stator , resolution of stepper motor , , loady regulation= change output,no load , output volt,, fault calcule breaker busbare ,IB= , I/X's=1/x+1/x.. - Implementation and stability inspection, cycle of training ,step take long time - psychomotor : and physical requirements of a job analysis survey rate the functionalite requirements of job rating class ,job analysis,process, resultat process , resultating primary resultat job session news , category data, work ,instruction , function,analyse ,PC to collect data and draw , construction job tools ,build task tools up data ,, - function in the real world introduction student to function ,function machine, functionalite machine easy ngrap, machine input goes same thing happened rules ,input predict output determine the input, input , metaphor by setting large cardbox machine mystery rules ,teacher student can create rules teacher created spread sheet machine,,,, -Synchronous system asynchronous effect .phase transition Asynchron 3 space 90,120 , wave ,, -understand the gradient function slope slip tangent point derivative ,vector function Probly calcul gradient loss function,,gradient scalar function ,have two function partial derivatives, -Maintenance during operation abnormal yes, breakdown yes, yes scheduling, order , maintence, database yes,yes period, mid term maintence scheduled, monthly equimt inspection ,. Implementation leader Education problem counter mesirw , trainer, equipment specific,inspection educay yes,inspection trait yes,self , leader Education yes, - factory dry battery process, phenomenon batteries failling , revolving table, description loss balance, -implementation ,system analogy,I/0 control investy application of embedded control controller to real time control algorithm input analogy output implo a closed loop ,how feedback use linearized ,non linear process and resultat in zero steddy , generate pwm outputs to implent variable motor ,supply voltage, Implementation a tachometer operational using pic 32 timer ,develop the CP program code to Implementation a pi controller moving average digital filter , monitoring display, reading embedded mechatron ,basic circuit pin microship pic , microprocessor, hardware basy trainer board workstation ,PC running windows,MC1 Linus ,12 v motor switch ,5 v,4A DC power supply,software ,mplabx plib cross , Project takeaway how read Nalog compare implent a pwu capture period measure , fundamental digital,open loop and closed ,process control , - fundamental concept ,unit introduction process electromechanic I/0 , automate process control engineering deal,automai process,open loop, DC motor speed counter record , Transfer functy magnitude response,phase shift .. -Synchronous , .time period phase move transition job work vibration robotics system Mass spring force oscillator ... Function , mx"+cx"+kx=f(t)..non zero setui mass friction k is the spring constant,f(t), Fourie series periodic function, f(t)= for.cos(wt). - resonay, control nature frequency, control logic ,circuit , - frequency constant , capacitance,static displaced,static voltat resonance ,piezoelectric voltage constant . Synchronouse robot dynamic, kinematics and control ,nomencenture ,operator , kinematics, introduction position represent coordinator , cylindrical, coordination,linear velot,reprensation velocity Cartesian ,rotation mayris ,active ,passive rotation passive rotation, elementary rotation,representation Euler angles, unit , time derivatives of rotation ,generality coordination ,mat lab ,rigid body velocity and acceleration,task space ,co-ordinate corresponding effect, f - forward kinematics for planar robot ,are and effector ppsity, function rotation matrix c -% GETULANG XJZ from option matricr (c) extract x ,yyz Euler angler from % rotation matrices,% ,author, - xy = a tan 2.(c(2,3),((3,3)); Y=atan 2 (c(1,3),sqrt((1,1)^2+(1,2),c(1,1) Ph=[x,y,z] Lifting job ,,, Synchronouse. Low of conservation of energy, mechanical energy (kE+PE), conservation, energie. KEi+PEi+ wnc+OE= kEf+PEF+ Oef Kinetic eny is key work conservation, PE, done by conservation forct energy are included, equation, problem,step 1. Determine the system,step potential energy conservation,KEi+PEi=KEf+PEf, step step enerivariouse ,object phenom.efficience, Eff= useful energy or work out/ total energy input.... -Total change in energy of systu, ∆u=∆q(v2-v1),, ∆u=I∆tv (I=∆a/∆t) Total kinetic energy of system energie of system conservation,u = kinetic t, kinetic t=i.v∆t.conductor electric field greadui eneri,colliu t charge total charge vibrat of Tom heat energy conductorP=E/t.. Energy ability work done =energy spent power what meant DP/St, f= dp/ St, St/ St (m.v) , solv equation ,,L.di/St+RT=E°coswt..dE.dt=o demonstrate pendulum force u= m.gh dE/St>forcing constant function.. -eskom smart meter infrast up grade programme relit supply empower them control consumer,meter consultation process meeting block tariff,meter renewable,customer interface prepay,remote .information meter5,, -advance measure approach methode, complex energy systems monitoring and control kpi,based on integration of based of active power .. Lesson teach note: What's is nanotechnology: is NM one billion the length of matter to pir perspective, diameter average bacty 2500nm long material 100nm nano matert,,,nono scat material, involved the product manipulation nanoscale material products ,nanosciet consists discot and character, -activity fields nanotechnology, @0 years research plan research ... - the electronics industry,wath is distinct need between electrical appliances and electronics electrical appliances and t flow of charged particles electronics in this metal conductor copper wire ,found electrical cord home appliances non metallt conductor ketler ,electron ,non metallic conductor semiconductor found cellphone.. -nanoelectronics current and future applications. - origins of nanoelectronics: ,100 atoms , - computer hips semiconductor industry: CPU ,central pro easing units found computer, transistors embedded in silicon, calculatioy per second required keep ,replaced out data technology tubes 1960 s , accordiy to Moore's low named after ,PC transistor ,45 NM ,process 47 million nanoscy transistor distrt accross 26 mm ,compone computer,, Components found quick retrial storage data volaty data abscen d use carbon nanotubes , computer switch data retention,data recovery during power cuts, - molecular electronics: decrease in size components molecular emerge task performance ,capacitors in electronics device ,capacitor store information, molecular been investigated act incredibly single electron . - organic light emitting diodes OLEDs : television and computer monitor ,electronic device Thea days particularly handled device mp3 player ,ligth emirtur ,OLED organic light. Emitting diode 100nm packed betwt conducting film called electront film voltage causes energy ,compare OLED ,screen film, product, - touch screen : technology as found in many table ,palm computer ,smart phones and news laptop,works , digital signal to control device interwar , layering of conductive film of indium tri oxide Ito , which conductor relay the ,x- y coordonne to processing components of the device ,smart ,ITO , technology. 1 nanowire can produced to high conductive transparent subnano wire network allowt hegher screen brightness ,with option of producing flexible screen Ito film, - improvement batteries: Devet in battery,lio batteries ,smart phone .. - risk and safety issue: unique physicochemical properties of nanomaterial electronics industry , safety humait,nano party,microsct,mass ratio risk asst , hazardous nanopt,national occupation health ,incorporate. - key issue to consider : renewable water energy have lagged ,, chip manufacture capabilities. - future risk assessment: The future nanotechnology in the electronics industry: - conductor,:material that can transmit heat ligth ,electrical charge in case electrical conductor electrical conductivity mesure of electrical current move through material it can see. As opposite of resistance, - semi conductor : a material that can conduct electricity.under specifical circulum voltage current flowing through common material . - led technologie: ligth emitting diode are semie conductor device emit light as current from anode to cathode .to cathode energy from of photon ,is release electron through the led device bprocess called electroluminescence, - transistor , semiconductor terminal current flowi between b, -capacitor ,an electronic components store electrical charge consiste two conductive plate separate , - electrodes , the anode is the electrode oxidation reaction takes place reduce, - graphene. Two dimensional one atom carbon atom bonded hexagonal the crystalline alloyrip structure a pure element ,pencit lead ,carbon nanotubes,hallow cylinder consistent,nested comprised of carbon atoms ,spherical carbon fulleren composed entirely carbon atom in bKk shapp also called buckbakk and buckmnjsterful,they commonly consist 60 or 79 carbon ,physicJ property , of substance relating to both it's physical chemical. -Metering screen ,ITC manufacture nanotechnology transmission component automate ,, Synchronouse system , synchronous intelligence it , Teacher’s/Mentor’s name, signature and date: SOCIAL SCIENCES PROJECTS NAME: _______tshingombe tshitadi ____ PROVISIONAL PROJECT TOPIC: _________________________________ PROVISIONAL EXPO CATEGORY: ______________________________________¬¬_ Delete all guidelines under the following headings once you have completed your Research Plan Introduction ? Problem Statement: What problem(s)/issue will you be addressing/exploring? Write the research question(s) or problem statement. Research question(s): Question). Aim: What is the aim/objective of this research project? Hypothesis: Variables: Method Procedure: tables, graphs? Ethics Safety If you do not have any potential safety issues, leave section blank. Time Frames References Teacher’s/Mentor’s comments and suggestions: Aug 28, 2023, 8:09 PM (6 days ago) to Support Project social.. 1. 2. Social investigation : science natural Support social creation and recreation orientation circulum Assessment police social enterprise entrepreneurs sector products resource energie electrical commissioner ,training support system circulum , synchronouse system social machinery social safety government system in the time framework regulatority circulum sector education grade and level in the job system , development sub sectorial system system social worker synchronouse Social worker public work system basic advanced must synchronouse with social system , labour worker OSHA safety society synchronouse with Commission electrical engineering worker data, 3. 3.1Teacher mentor :social education Social education labour and land reform system , organisation entrepreneurs and humain resource system education system asynchronous,system class society ,grade society science mass media society work classes. - families class work project, organisation non governmental social education entrepreneurs workers sub sector self employed self business was illegal or fraudulent system in normale system entreprise government system asynchron, need to educate social media by training for to synchronouse, -3.2 lesson system social media support rural to teach and non gov, -file worker, size years, skill development,size ,class skill ,model frequency ,means , value compared ,size social skill or semie skill grade , qualifications employment years , normal ,criteria choice guidelines normal, ,,report learner ,report job normal work labour synchronouse , report job pay hr give normal conditions , . Calcul system find balance merge social .good job - 1..mathematic investigation , Framework regulation circulum policy for mathematics resolve , problem for science discovery system Equation computing system equation, algebraic logic , analyse system mathematics find problem or concept ,proof existence natural system undercover real problem in natural System exper or artificial intelligence or language reason calcul, Synchronouse system to find more equation algebraic ,complex numbers master system deviations system ,equation find mathematics number master skill knowledge,proof existence of system function or gradient function ,function was real on distribution and transmission power ,was real system that was equation remarks for master number , mensuration system equation and compare slop of number deviation ,angle period time volatility time loss time break ,that was equation , trigonometry and geometric pattern number , statistics and probability to find on projectsion number real and case reason for linear systems.. 1.2Teacher mentoring: Teacher education,system mathematics education subject lesson circulum, apply skill compilation language logic intelligence or robot system capacity of synchronouse system, mastering skill number use instrumental take measurements rule and measure instrument for understanding Lesson plan orthopedafic projection planing , synchronouse ,system scale analyse geomatic geodesis ,vector equation quadratic linear synchronouse mensuration equation , Activities ,system resolve plan diagram current sinusoidal wave form angular system projection orthopedics activities,design form , computer language wave, 1.science natural chemistry physics: ... - project Investigation: natural science: earth moon sun planets system quantum years ligthning years days start day end of day system ergonomic design Natural teach discovery science engineering Investigation , physical and chemical, Engineering ,computer information technology, mathematics mental calculation agronomical grade class agreement , grade geotechnical grade class years geography engineering,mining investigation grade class matter Investigation, science class matter elevation matter atomic cycle ,Watters cycle , recyclage matter ,investigation find matter chemical composition matter ,solid ,GAZ liquid state , molecular ion electronics development skill materials ,charge dischage movement find current electrical mining agreement , degradation material and graduation material system , synchronouse material system Earth system cycle life skills ,,.. Chemical. Size system difficulties to synchronouse for reason challenging life and disorder order natural system undercover real problem, industrustriel -Physical state matter Liquide to GAZ,GAZ solde ,solide to GAZ process Synchronouse phase transition matter, Electricity man's mecanic, - electrostatic ,electrocinetic, electrodynamic, electromagnetic, static,dynamic ,cinematic , Electrostatic investigation phase system matter transformation ,force electrostatic transition electrodynamic phase to electrodynamic current to resistance resistance to field magnetic,,force mass phase ,generation phased to transform phased , system skill , transmission , distribution system synchronouse real time ion matterial speed celerity transmission ,km/s - teaching education ,science natural investigation , psychosocial psycho science development system natural task system computing file system Education technology system science didacic system framework regulator, Teaching phase transition phase synchronouse system development , chemical sciences ,,material phase material transformation plastic ,elastic deformation material ,, computer system matterial decomposition chemical atomic spray eating phase GAZ generation force cycle synchronouse system generation to system transmission and distribution Metering, ,atomic spray heater product coil consumption phase cycle generation system going ,to transmission ionique chemical computer system grade support to grade transformation synchro reactance system , electrostatic electrodynamic magnetic synchronouse to wave to distribution system ,,, resistance way system for material recyclage, phase material strengths,, tshingombe fiston Thu, Sep 7, 3:18 PM (12 days ago) to Support, TSHINGOMBEKB, me Teacher mentor: safety security accreditation teach traffic police -trade vs learner vocational , accreditation safety security safe,road teacher secondary safe road usage, foundation for road safety meaningful maturity existence self control technology and responsibilities creation genesis magniful machine sense of responsibility and Education task of the school compiling, traffic training in the secondary school, traffic situation child youth road, orientation youthful level abuse, among legislation low vehicle element natural insects phylogenetic,pretestimonal, -road safety education and Education part perspective stretches maturity Education situation situation child rod block, chorence,psycho pedagic perspective magniful questionaire secondary school child learn in the road safety education situation always leave among others think fact, concept compare matter interpretation emotional fluctuations inferior child master road available of book, -fundamental relationship understand authority between teacher and child teacher and parent risk child freedom resposable, -A social pedagogy perpespe tive road safety education always take place social situations secondary child creation communication gap, between teacher parent. -didactic perpespe tive in design diffential road safety pedagogy diary situation teacher has keep following learning action the subject matter must be interested practical, experience involved. -An orthopedagogic and orthodidaction problem study learner is to indentify secondary purple mine whether hold implications safety. -child basic characteristics aquerie methodology of road Education maturity aspect lesson discuss holding gather, -the goal traffic education, traffic lesson objectivity clear identify basic, the learning on skill or interpretation problem setting and resolve challenge course advantage grouped pupils activity part in the lesson understand manipulation, -course of the lesson actualization Pre - knowledge safety lesson pupile have knowledge road safety pupile. -teacher discuse, unlocked of new content basic functions pupile may expected road, groups discuss in greater class arrangements variation place criteria judging success group discussion example,ex lesson a telling subject STD,6 time, Education object lesson to explain pedestrian behaviour the learning objectives -schematic present of Education and teaching, teaching and software and hardware visual. -education qualify audio visual teaching knowledge, -safe driving and elementary knowledge of motor vehicles, -pupils car owners car motor complicated mechanism dangerous master to supply of in sight those of driver, gravity,parking down ,centre inertie, energie,collision friction force impact counter determiner force impact limitation mental emotional film understand,, -conduct assessment police,driving asssessment police traffic on learning assessment police ways on policy on assessment police engineering way to manager learner in management system police vehicle information learner transport information circulum learner In phase period synchronouse system and asynchronous system phase movement in out file compilation Management learner to manage information system IMS, securite, student information system advantage and consideration,role management information systems in Education and in police or Industrial, engagement power cloud base schools management system, TSHINGOMBEKB TSHITADI Wed, Aug 30, 7:39 PM (4 days ago) tshingombe fiston Mon, Sep 18, 3:39 PM (22 hours ago) to Support, TSHINGOMBEKB, me Engineering science: Education Teacher’s/Mentor’s name, signature and date: Social education, education environment ,geographic life cycle industrial recycle synchronise system biogenes system hygiene system project expo science ____ Support Tue, Aug 29, 2023 at 8:59 AM To: tshingombe fiston Good day Did you participate with the same project at a regional expo? Expo Team 63 Reier Road|Atlasville|Boksburg|Gauteng|1459|South Africa T: +27 11 894 1365 |F2M:+27 866243127 www.exposcience.co.za Re: Documents wallet Portofilio,office Engineering project order management appointment project file order sale campagny meting tbrigade,edutech psscm... agenda office .PC safety wallet documents financial office -1. Purpose: documents wallet Portofilio , documents systeme info., project appointment office Poste Agendas office PC safety wallet document wether documents,data base , documents network research office appointment. - project month ,order document . Order screen. . Statement documents. 1.1.Purpose: documents case book .booking documents , financial information documents office , -Office document -post documents, --Poste wallet easy documents Poste ---office ,post bank , archfile office document , Docket.. -Documents arch file -Documents stationery document -Documents office -Documents database system . -Documents bookeping sale buy , -document library bibliotech., - documents, .--- engineering creation document ., Post document office appointment submission close , -Price documents, price close tendered ---Poste value bid posted wallpaper, Minimum required Poste tendered Spreadsheet,office PowerPoint, -documents ,office post address documents Relyan documents, -Documents memorandum access documents Poste office , documents reading , documents , Project posted Appointment post documents wallet report agendas Project - documents processing input output Wallet project, management - documents screen radiographic documents scanographic documents photographic document image documents artistic valeur attributes document pixel coulor , documents Document monument magazine monaitaitarist ,tableur course, documents, Documents note ecriture 3.purpose . documents wallet Portofilio evidence,, -Documents wallet registration form appointment office Poste wallet easy. - register database documents wallet Programmation office register document. -Database employment documents wallet . -Office document wallet Portofilio. Information recruitment documents wallet information employment system Database office d base qbasic visual basic office COBOL . - office project database documents wallet . Stationery document wallet office information handing Manuel system -script hand project documentation -arch file ,office folder desk information table time table task operationel system case paint case book library office , -office size .mass. meter square area - casebook, rerwiten framework tools form assessment formal Summative office , -Tools frame text page , stationery design printer sign industrial papper standard. -Tools paint case design , Office automation machine system la guage conversation convert reader PC and environmental PC printer system recruit machine database system project , documents wallet arch file database electronic memory wallet , Documents wallet information employment system specific, responsible,, -Documents wallet bank account database automatic ATM ,printer bank ,stamp teller stamp , statement,check database system , account books library bank ISBN order book bank order project book bank wallet , employment salary Record book customer reviews, customer record registration ID number system information, Documents wallet Portofilio job career emploie, - database emploie system entry and dabase outcom up grade ,up database system project employment opportunities, ID - ID registration form record form entry ,form exhibition,form move , form period form years value database emploie Emploie record training job graduation,job training post advertised documents wallet resource humain , personel - ID registration form customer recording training custome entry exhibition, database emploie graduation job post customer sale reward award customer ID wallet documents Portofilio, officer - bank account statement bank customer clearence cost amanded correction reward discount I'd customer deregister penalty, I'd customer record emprissonement labour work I'd cost years , system document wallet office information handing, - program logic control customer ,logic system custome I'd , programme language machine customer database system document wallet Portofilio, I'd - wallet I'd trainer, course job ruling job duty job post job weekend job . Wallet account e wallet easy pay system. -Print I'd framework, print I'd information,,print post ponent I'd ,print job duty post rosta,print task operation print salary day , prive over time ,printed provide fund ,print tax job revenue emploie post ,print compensation award job , print insurance job ,print data dol registration labour, print conciliation arbritatiin ruling job conduct job day 90 day years progress conduct , misconduct,dismissal award job,print holiday job ,over time ,print pension job ,print intellectual property job register ,printed social insurance job security job , printing policy job record database system wallet accountability systeme, print order case power attorney debate creditor legal job , printed training record job authority job skill development job, training certificate in progress ,award certificate,printed agreement settlement job , print documents grand total wallet statement salary emploie resource emploie,humain ,material visa printed code , registration, database system providing fund , earned award printed , Convert -0ffice wallet Portofilio Poste office documents wallet resultat ,re posted , disappointed documents printed , rejected documents, expired documents posted up date documents,up grade documents wallet Portofilio employment and custome record , licensing database. ,- design project office to office travel office information system, management information systems documents, , - design projects inovation management system conduct process following database maintenace wallet account account posted recruit machine database maintenace repaired , intelligence systems rebuild office , rebuild Poste re posted policy meeting, reprint documents review document support, wallet account, Booking: filing documents posted wallet account documents booking training records , -office travel,,office cad corol drawing ..project office documents wallet engineering drawing .line work , planing work, planning jobs, systemWallet account dr 12.Engineering: electrical 1. Purpose documents 9.purpose : documents wallet,office, Training customer office record , documents,office, Training customer,and training student university trading up date upr grade student information system,up grade connexion system, 9.1Purpose storage , office genie counseling,genie soft ward genie hard ward ,, safety security policy office counsultant jurisdiction Documents submitted Assessment and re assessment peer self group information technology intelligence , technology Technical PC vs science computer vs qualifition insurance information -help memory pilot math information vs campus numerical box ,math info,news technologie ms word ms help memory copying syllabus training Unix Google Intelligence artificial genie logiciel , input technology ms office creation news technologie help memory use for ms treatment technologie input output system expert intelligence capable resource human capacity not it includes mathematics algorithm ,, - calcul arborith , topographic topologies aerveur , intelligence robot automation science language science language science computer science language ,science mathematics chimic physics stereo chimic physics synthesis and , Polytechnic electronic information technicien ,,no ITC it is include work topic it faculty option intelligence artificial and genie logiciel , - pilot lecture pilote fly driver disc memory network navigation, Mathematics sacrifice workplace visuel basic , - honesty intellectual library pilot ask questions training PC cyber ,training research ,x vs y procedure create page create algorithm arborith ,step number phase fine creation page , button exportation language literacy ms word , creation find studies habillement ms word creatt find studies caractere address vs medecine mycine bio algorithm ,science Polytech algorithm -retetion office ,button cyber button command ,do's vs algorithm procedure medicine to mutch work office contii algorithm is vs algorithm for students , - subject theory vs for laboratory training work , literature 'creat visual basic office protection documents client terminal all letter memory , - algorithm initial procedure select , operationel insert button, click operationel, - information processy vs Computer office , financial Computer ms , window theories safety policy theory vs ,technical PC ,vs science , PC ITC theory create cover page letter folder create financial fibre optics create xompui lettre CVS ,create ms word processing marketing processing asj , buttons ,create for data data base office ,intellectual ,oms algorithm PC ,technical mathematics science PLC ,robot Unix, -info process vs computia vs management system information business PC ,admnistry PC theory cover ,page office traine power point acrob converse, - mathematics info comptabilite invention creation plan comptable code binaire calcul, vectorial code binaire 'calcul vectorial dimensionnement algorithm mathematics financial invention plan financial savant Gestion , -arm calculteice commercial, invention formuler mathematics function grand droit , - invention: ax+ by+c. functionalite logiciel rigth autocad cad ,vector financial functionalite value adddiatribution ITC ,scatter robot geodesie projection ,invention mathematics ,savant mathematics autocad,memoire mathematics -inventiin mathematics info science computia mathematics exchange call cash nothing financial functionalite, - invention mathematics series sequence integrally ,x =3 ,if y=4 else the x,y co - ordinal scator ,z = matric information equation ,x+y = 0 Fortran sum limit x ms ward display, ITC InSite mathematics coverage page is site theory in site rules ,matht recruitment info mathematics recruitment informer investigation Mathe quadratic make square rectangular plot investigation quadratic information language display generate for ,no it robot intellectuel system mathematics invented equation ,x+y = 0 quadratic, - no invented robot x,y function scater robot intellectual ,financial invented calcul, permit to account money ATM to save formule , - info language inventor informer - info invented process, Mark ROM,octal , - math info initiation information arithmetic logic process logic ,Espace pixel VGA,cla or, invention -mathematici do software invention hard math PC ordinance sequence,MHz gigabit calcul logarith intellectuel processor it mathematics invented equation computing , -ms word disc mathematics character 100000 caractere programs frame program , excell table equation financial word limited 1099 word octa octal binary equation,-ms internet robot word page mathematics character system mathematics, - do's mathematics code 00000, - math inform science and computer science chimie info physical science chimie faculty chimie instrument, conversion synthesis, -mathematici info et Polytechnic and science academic material mathematics, - power supplies arithmetic machine ,process control project ,VB ,access , actual technologie ,info mathematics equation logic integral Lim actual review series automatic system robot language technology mathematics ward caractere , actually technology,information ROM ready, access.memkry, , to me Schematic showing to me Schematic showing a 3 phone system new button visibility above ,each handset must installer ,intercom system used surplus , - parlist : handset regular telephone type no push to talk or sound ,power , lungs buzzer 6, volt Eduard 15 ,see text cradle switch phone or see text , strip text cases miss hardware,form system every 6 day or equivenlent ,6 volt interconnected , distribution such shake , - personal call plan : Telephone call plan B1, B,2,B,3 Call A1. A1B1,A1B2. ,A1B3 Call A 2. A2B1 ,A2 B2,A2 B3 Call A3. A3B1,A3B2,A3B3 Call A4. A4B1, A4b2, A4b3 &1 alpha= the effect of in the level of fonctionnement call telephone call plan ,I=1, Beta=the effect ,ab of factor level , x1 jk= , error association observations level plan analyse - radiotechnic, Power amplificator TV sound base oscillator pentad tube , Characteristics indirect cathode wire V,1 6.3 v, Source wire, Use conditions nominal RMS, - voltage and. Va - 170---250V - voltage grille. V get --170--250v Voltage. 45 , 32m Current. 62 2,4 ma - coefficient amplificator. 15 ohm - resistor internal 0,2 , 4,6 MV Capacity Capacity grille ...CG ---14,7 of Capacity and grilled cage <0,8pd, Value limited Peek voltage anode vap max 7,kV Voltage anode Va max 300v, Voltage of grill. 3000, Cathode current v max 30 w, 180 ma,8,5 + Telemetry video output pentode ,power flip flop, , - emettor , af amplificator ,emettor ,compositor number ,receptor ,display , speaking, - IR(t)=VRF cos (wi.t)=I(t)+∆v1 -QR(t)=VRF sin (wot)=Q(t)+∆v2,, Insulation in receptor conversion,in case we Cree en our mixage voice I et Q ,, Voltage ,, quadrature, insulation mean level power -typica using single side , telecommunication street distribution for new urban residential estate Electricity peddel ,started conduit , road way , Legend ADSL signal spliten telephone , exchange, ADSL convey frequency , asdl modem yes customer premise,, - typical grand copper twisa. Network telephone exchange, , Cabling homes for telecommunication completed guide home cabling , Line 1 yes ,line 2 yes ,,phone ,1 yes ,phone 2 socket jack yes , mode 3, 5 equipment, Possible fault due comming of the telephone voice port inside , fault due to switch relay connect in mode ,, -basic home network system typical cabling arrange and connection for , typical telephone and data services, ,Famut TV , bender PC, study PC, kitch PC ,wall ,,ethernal Legend : modulator socket CCO,modulator coaxial socket , coaxial plug Polyphase emettor receptor frequency intermediate heterodyne class,modulation phase phase (t)= cos (wt+$0) Sin a (t)=o,then m (t)=o module phase shift signal module ,m(t) = sum ,, -canal of transmission GSM cellular antena interval time area 577us signal terminal, Wave electromagnetic tic plane impedance caractere area,E/H=377 ohm ,, schema btsbsc,msc network fixe ,, Numeratation of voice Fibre cider , module, filter decoder ,input output band 300hz - 3,4 kh, 13 bit cadence ,, Input line l1,2,3, cabling - circuit command selector , meter decimal Relais , rotational test , duplicate line off,cut line , Decimak control ,direct A, switch register in the register in the group the calling division aearxf variety, Switch line ,switch final connecter ,signal control send impulsion ,interconnector , pilot switch start , div ,div,, - multivaria data analyse telemarketing,point ,do√ sumb(x1k-xjk) exp 2,, structures equation model customer loyalty adversity board award , quality imagine customer satisfaction,x x=, loyalty= b1 brand customer ,brand equity =C 1 advertising + c2 brand award + image price customer satisfaction = image price, -diatribhtor performance Distribution/ service ranking X1/) overall performance ranking y1// ranking differente d1=y1=y2/// diffential sequence,data analyse , investigation of association , - Winer trading plan bet Net profit= number of wine bet x premise pay out motion number of lossi. ,bet premium, y profit or loss,w number of winning vet ,k payout motii, -model : I Model: ml 06NP, ML6,c - capacity : 6kg -15-30 Resolution: 1g+2g-5 Weight range ,- 3 kg ,7,5-6 -train display ,zero net - sub display: zero net ,vf d LCD graphic , Disparue dwe , ply memory/ ml on Print / rypr , available size labej ,Manuel Max : 90009,pl, width - label printy , interface,power requirements ,power consumption, operating tem plotter size ,mm ,product model - report financial Option model product 1 m b memory , Specifications display ,operator ,5.2 LCD , 2x 16 pop up ,20 lines Memory back up , data up vendum lithium ,power consumption , AC 120 v ,operating 9A, standards 0,2 A , operating AC 239 ,operating dimension - system development: Sample Gant chart showing progress system development activities by putting bar , Project planning documentau, page) - system ware inventory system modifucatt system ware house , - system schedule activities completed activity,analyse - activity ,/1/2/3/4/5/6/6/8/9/12/13/14 -required definju -for project team - definition and - definition objectivity -R3 interview whereataff/ Organisation required Vo review Design - revise programm - specific report - specific screen - specific documents - soexifux Documents change - management review - implentation - code programxhange - build test file - build test - test produxtiin file - revision product file Revise - production file - revision Test short Bev Test product file Manage teab Install where house Teaini new - quality management iso 1999 totaj staicale process control ,produce software group project team - product / vendor Designer) Oracle Development studies) Microsoft Knowledge/ system architecture,system investigation use engineering computer case tools automate ,task required system high degree , package focused association stage v, arafw case tools selected - development for orientation program Frequency (y,x ..) 1/6/15/29 Head score x /0/1/2/3/3(5) Score deviations/-3/&2/ Purpose: technical PC vs technology PC support , - Technical PC electrical electronics PC Open lab ,mechanical electromechanic mecatronic system disc , buildings construction PC architecture PC Art PC hierachie vertical horizontal process word , excell algorithm Fundamental PC , -fabric fundamental process system Fabric circuit resistance , R: material, R=resistivity ×l/A , l =w,,R= resistivity .l/y.w=, R3= resistivity/y,, -metalic late fabric , semiconductor film metal oxyd silicon Fuk autonom career , Sio2, ,,input R1/R2 ,, DDP/Nikel, charged ,,,discht batteries radio -Pbo2+2H2so4+Pb=PbSo4+2H20+b.bs0 Turned. 1/2πfc=2π.f.Iresonanance, L.fo..fox=x.l=796 khz select ,Copa ,, -if filter modulation signal, mixer yes ,local oscillator yes ,, -Am yes , 1mv, first r.f yes ampli, second ampli yea 50 MV,, detector yes , AF yes ,power out yes ,5V, 10 w,, Dielectric: microwave , wireless communication technology yes ,master oscillator yes, -master oscillator yes, multi yea ,power yes ,antene yes ,, Parabolic yy advance , D= Pmax/PAV,, Scat = 174.698/DM,, G= k(π.D.D/x),,impedt , Z =√R.R+xl+c),,z= R+j,, -electronic digital analogic circuit ,, Input a,b and gate yes z= A.B 1 kilo ohm, Booleen algebraic,A+A=A,, Identify booleen symbol switch circuit function F (x,y,z) = z in , Karnow map ,,y,z AB+AB=A@b - decimal number /x//y///z Min term ////max term l/0//0///0////0////x,y,z//////x+y+z _analofue computer , comparison analogues and digital computer, Quantity,/analogue//digital, 1, representation /continuous voltage //binary number changing step 2aritmethic /by measure voltau and // by simple add ,losing course shift Output of information/ graphical // languages quantity data storage, Storage, -potentiometer coefficient resulted and reducing voltage integration by factor (6/12), initial x= 6/12 chart capacitor, input output and gate, Inverter integral circuit DX/dt 6/4 12, Sum ,interger ,summat, Differente RLC L.di/dt.+R+ 1/c integral I St E=L.dk/St.In+1/c.inyegral, 0 time ,t Timer ,o'clock Initiation condition variable ,respect time St ,, IC input x,y output eo=[f(x-y)dt,, (eo) solving differential equations, 12 DX/dt+6x= ,given x =6/10 at t=0, derivation, DX/dt+6x/12 ,equat,these 6/12 require at output integration, -conversion Digital input a,b,c,d yes D/A..output Digital / analogue D,c,B,A/ 0000/0volt 0001/1volt 0010/2 volt 0100/3volt 0101/4 volt ,to 1111/15 volt - full scale voltage , ex 9.1 5 bit D/A converter ,0,2 volt digital in 00001,analogue 11111, si SB =0,# v and 1111=31 full scale output = 31×0,2 V=0,2A , even 9,2 A 5 bit D/A Conte delivt in output current,100mA, digital input cours digital analogue output cours digital of 11@0@=10ma,, 20 = 10mm let B = 10/29=0,5 mA @110= 29×0,5=14,5ma,, - algorigram equation booleay,, Prog, start writing a few dug a possi yes , test run progrt yes,or fix bugs an introduction as news on possible, yes Bughe , stopped,, -x = 1 and y=1, yes A<Byes x-x+3 and y-x,y ,print z , A,< ,x,y yes , x-x+3,,y+x+y, z<x+y -machine code programme ,x=4a.a+2b,z=N+(x-y) -op -code /address 1001-load ACC/a= address 0000001 1010-multiple /b=address 00000100 1101- stop x= address ,0000011 0001-stop,, - construction PC architecture design development, Input unit yes mouse optical keyborad yes card red , control unity yrs memory RAM ROM yes , output yes arity yes CRT display print plate yes, - database yes CPU yes ,room yes,I/o, yes vertical , 8 bit 69kbyt,, 64× 1 k=65536, FFFF,52428 Memory systt ,@00, Digital / analogue, Sequence+3v yes 0,15, yes a+b, A,B , Room ,ram ,, Inlut Row,yes and Dara,yes gate and output gate and , Transistor bipolaire logic diagram static RAM , ,select R , supplies logic ,y select ,, - booleen algorithm: program, read write yes, memory registerer x,bit ,.Emory buffer, -printer charge plate ,electrostatic , digital input ,carater source ,papper, - lazsr printer ,trasfdr ,Lazer,mirror,module, - ribon papper,character, rotau, Magnetic tape. Supplementary capstir,data organisation file -data memories time yes, 128 sector memoire, 564 bit sector, Input output device microcomputer converter serial data , parallel decoding, microspace,ram 16×4 ,, binary input yes , - disc label plastic with write. Ed inde hols , -sectir track 2,255 byte ,logic process read, digital ,step motor , - NV ram yes ram yes ROM yes, CPU semie conductor yes ,hard disc driver yes , external yes flopy disc ,data 150 km to 12m ,@00 m , -Typical machine code 3 bit /5bit//descry 000A/AAA1/load AC 001B/BBB/ -adress / code//instructions 000/load branch output /load a.c 001/ 0010 0011/ 0011/, Network interconnection cellphone PC ,, Purpose: project and circuits ,series and features, and services Constructional project: Design concept, sample ,circuit , Part list multi message voice recorder, -1 PC board code ,size 119mmx 57 mm -electret microphone insert, - 3 way terminal blocks PC mounting 2 way terminal block PC mounting, - 2 pin section of Sul header strip ,, - jumper shunt , - 28- pin Dil IC socket , 15.24 mm spacing,1 8 pin Dil IC socket ,7.62 mm, spacing, 1 2,5 mm concentric DC power plug ,PC mounting (con) , audio phoni socket ,PC mounty(con 2) - semiconductor 1HK828 voice recorder IC (ic@), Im 358 dual op amp ic2, @ 78l05+5v regilt(rsG @), 1 5 mm green led (led 1), 5 mm red led (led2), 1 1 N 4 004 @A diode (D @),, - capacitor:1 ,2200uf 16v radial elect, 220 if radial electrique, @ 22 uf radial electrique, 1 4,7 if 25 tag tantalum, 1 220 nf 100v mkt metalisssd polyster , 100 nf multilayer monolithic ceramic, 1 ,150pf disc ceramic,,, resistor (0,25w 1%), 1 . 470kohm. ,2. 100k ohm , 9 , 22k ohm , 2 . 1k ohm , 1 , @00 ohm , @ . 47 ohm , 2 . 680 ohm, From ,kit available Link 1: in = beep disabled, ,,,lk2,/lk3/ operating mode , in /out/ 2 message, random access,/ out / in ,4 message , random accet, out ,out 8 message random,access ,tape 2. intelligent dimmer: 1 PC board , code 799, availabt ,service size 76 mmx 50 mm, IP 65 sealed abs plastic case clead lid ,size 125mn×85mm×55mm (jaycar HB - 6#46) 1 .flush mount 3 pin main socket Jay car ps ,4094 , similar 1. IEC male chassix connector with mounting holes Jay pp, 4005 , 1.10 MHz crystal (X1),,,147 uH 5 A inductor jaycar LF - 1274,,,14 way Dunkle vertict sockets con Jay car H3114, 14 - wat Dunkle screws terminal plug (jayecar H M-3114,,110AIEC main cord, -Semicondors, @ - 1 pic 18F 1320-i/so soic Pre programmer microcontroller,(I @),, @.IR receiv jaycar zd - @952 (IRD@),,1BTA 16-500 isolated tab triac (triac @) - do not substitute,,@ Vc337 NPN transt(A1),, 2RGB 5 mm common anode led (led and led 2, 11 N 4004 diode (D@), 1 UF4004 ultrafast diode (D2),,11 N47341w,,5,6v zener diodt(zD1),, Capacitor: ,,1470uf. ,16 v radial electrolytic,,1100 if @16v ,250v, AC x@ metallised polypropylene,,@,1100(0,1uf)250v ,mettalliaws polypropylene,,14,7 nf mkt polyster ,222 ceramic,, - resistor (0,25w,1% unlet Alexi 13,3Mohm ,1w. ,,110kohm ,1 w,,11kohm,11 John wirewound , 12v operation,,,14709ohm 5 w wirewound,, -miscsllabsouse,3 m3 x 25 mm nylon s Rew (to secure px board, 2 m3 x 15 mm nylon s Rew for IEC connector, 3 m3 ,12 mm nylon space,10 M3 nuts ,,, 1.100 mm of 0,6 mm dia .tines copper wire for link ,1200 mm length 3 ,core Naina flex 250 v 10 A rating , 14.8 mm red spade connector fully insylau, 14,8 mm yellow spade connector fully insulated , 14,8 mm yellow spade connector fully insulated , 5 100 mm cable ties ,, - additional part required for testing: 1 .12 v AC ,50 ma ,or 1 A plug jaxj , 112, 1.12 v ,, 300mA light bulb Design : drilling the lid ,,install with crio ed, components side board ,,copper side of board ,, cut out for IEC mains input plug - building the circuit wizard way , Decade counter ,0-9 using j- bistable,amend ripple circuit and gate, flip flop , Investigate - a block schema diagt of logic system ,,under carriage door warning logic Five door switch logic signaj respective door open and logic 9 when close all warning indicator are active low visibility audible, study what logic level appear point x,y,z all door closed, wath logic level appear point x,y and z with the left wing door open and all other door closed ,wath logic appears x,y and z with open all door closed ,4 when any more , - answes to xhet quest ,,feed back via collector Mp lab,library install tutort program -led EC reflow new professt,PCB operated from professional machine -supply voltagt : 239 v / 50hz only Power : 3500 w Weight: approx 29kg Dimension 629 x245×520 m(wxHxD) Hear methoy , combination it grad and Operat: directly menu button LCD , Menu ,englit,, temperature #5to 300 Maximum pcb size ,400×#85mm Temperature ,2 internal ,optimal - tear measuy Component list. Resistor: r1,, capacitor, semiconductor D @ to ,IC ,,miscdlanouss String buton and function using button s 1, S3 - command action interacty command Lab testing Specifications: Suitabifor 2×16,4 and LCD display using stanu14, or 16 pin connector back software controller,backlii, 5×6 matrix kepad for maximum of 12 key switch or nine rotary encoder building inpusht equivalent,buzzer,on led,power via USB,external 5 v supply primary cell,0,8-4,4 v lipo battery ,5 v and 3,3 v regulatority sodtward on off contri possible, lipto battery charger measure , 34 bit ,48 pin LPC 1343 microcontroller with 32 kV flas memot ,8 kB ram and numerous peripheral like USB, ix,spu,mlu uart , compatible with the free LPC presso ,3,4 and coocoz ,ise,,compatible,debugger, extension connector almot, availability on connection ,splita le , detachable Min 4 key pad maximum. 3 rotary encoder ,dimenst adapted to type 2616099 case open source , Operationel: microct,stars is oscillator Arm operator logic Purpose: open lab system, game completed module test test practical, test power electronic numeric ,logic sequence, programmation amplicat feedbat, - experimental voltasi out + 15 VCC protection short circuit ,12 vci ,2 ,24 VC, functionalite,generati onde sequence amplificator 5 v , frequency 1 Hz to @ generator ,@ Hz , transitor Montee,@ Hz to 1 khz , transisty logic true false MOSFETs, cont rectifier motor inverter, principal ,12v ,3900 rpm ,1,2 A , 3 cm , logic numerical ,4 and (2 input) and ,3 input ,12 and , 4 input , 12 diodes , restrictions, study ram and stockagw information ,pannel ,4+4 buffer ,3 stare register buffer ,8 bits ,decoder , of 4 ,19 ram , 1024×4 displt, hexadecimal, analogic 8 bit ,convertisaeue ,8 bit poteu, Bistable panaux , demultiplex,4 flip ,compare,4 cannot, register , calcule , arithmetic,16 logic ,4 bit , compte binaii,decodeur elrom ,8 sons led decodeur , linear discretion ampli relay , cablage schema , test execut ,system mesure norm , network transmission,53 MBS ,16,, Biomedit, multimeter,3 and 3/4 ,voltagt cc ,490 MV , 400 v autirange generat, ,, - detert type size ,if move water .. If , else , else if to ,increase,, Procedure PC ,input file control ,select print ,data , print file ,work store , registration , Purpose: PC speciation: format Intel core 7 , exaterne 975 @ ,3,3GHZ,,Intel DX58SO motherboard,6GB ,G skill trident DDR-200 channel,gainward ,GTX580 sponsored by evetexh ,wD 320GB ,data IU Hard drive ,Intel core ,I 7 870, Gigabyte P55-UD6, LG flatro n , Kingston SSD now ,, AMD ,, specifications: A, essential up grade, components, AMD , procedure , chip choice: the starting dusk x 2550BEb,CPU ,,X4 645 upward faster closely, processor ,direct conflicts show improvement,load processor specific benchmarks 3d rendered video encoder x 264 raw computation performance of up graded CPU increase ,time faster CPU therm ,,fps function ,, -graphic upgrade: news little graphic card up date gaming Phenom power x 25550 choice graphic card filled card up grades , sub R1,500 budgr choice HD 5770 bigger to jumping performance DX 10 gaming word in conflic, -playform up grade , CPU up grade path for LGA ,775 sockey motherboard PC area ,LGA 775 core ,3 GHZ, core, 2500 k CPU , 4GB of DDR, ram ,, - direct x9 tessellation performance, Heaven 2.5 / frame per sencodr higher better Base system with sapphire HD 550/@7,# -ugradr to HD 6959, Direct x 9 gaminy performance Lost planet 2/ -word conflic / -far cry #/, -0n the card tried edge graphic tracked down @gb sapphire 5850 Xtreme , retailing R 2000,price complain 6 pin power connector which PSU PSU had it physics driver installed benchmark away, result were disappointed 3 D marks improvement less word conflicts did manage,lost planet frame wallet being R,2000 light, completed reliable, Battei g ram: slot 1,GB system memory stick R150 ,ram benchmark,ram ,, - upgrading memory and processor GB ,test windows CPU,the HD Windows shopping GB driver -rigth components for the perfect budget building: perfect machine Shopping list - motherboard F1A75-M - R1.100 -Processor and A8-3850 - R1,300 -Ram: corsair 4 GB 1,600mhz -R1,000 -graphic:xFX random HD 6670. - R 1,000 -storagr ' seagi 750 GB - R 610 - opticy ; lite on DVD Rw- R200 PSU; Corsair 430w R470 - chassis : cm elite 343/ -total: R 5,360 Purpose Built: test components:install CPU vital component case layer CPU guard ,CPU pea, lockdown add sized , -cooler and fan : fixing , bracket underneath ,screw holes fitting ,connect cable mobos , - fit the ram : ram open the catch,snai lock motherboard, memory Chanel ,1 and 3 operate, - the graphics card ,CPU bandwidth drops xb soon involve another GPU, in an slu ,cross fire x array ,. manufacture usually,x16 -hook up the PSU connect ,20+4 pin connector to mobo,the 8 pin EPs cable and whichever 6/8 pic , -test the components: power that sucker up by turning the PSU hitting button ,your screwdriver board Striking the balance, because corsair 4 GB 1,6000mhz DDR3,liani ram APU shares the systt ram between CPU and CPU match up ram gaming rates between at 1,33mhz and 1,600mhz case , resolution monitoring Prep the case : bits ,ATX backplate and mounting screws, install the PSU screw top bottom cable out way module,drop in mother remove the GPU from mobo for the CPU Coller ram still in place mouti f screw it in place round, Reunite GPU and mobi surprised fiff Ddly your case will allow pop out some driver bay possible card back top pcu , -test it still works : connect the PSU cablt mobs CPU power ,case fan yet post beeps or led light up your, -tech analysis: 2560×1600 screen gamii surplus frame ,R 14,00 flashiy GPU bios , CPU rendering performance: Cindbdnxh r11,5;/index higher is better -gaming/533 Direct x 11gaming performance Dit3/frames per second higyis better Stock biof/355 6970/408 -direct x 12 gaming performance Shogun/ frames per second high better Stock / 442 - hard ward reviews -laptop repaired : screen replacement ,motherboard repair,ram,harddriver,CPU up grade replacement, batteries charge, domain registration, capped ,ucapped,internet ,fax ail voio,Intel B800,3gb ram /320g HDD,wireless ,/15,6" screen webcyfull keypad, camera chanej DVR -ugradr ,repaired build PC,upgrade key component ,fixe PC proby fast ,set up a home network hardware Byii componey process hard ward,tools,checking compatible CPU socket ,ram core components,installing motherboard access Ga - 88gm - ud2h,USB support ,installing processor ,installing a coin,install ram modukr power,installer graphic card ,PC's reason HD 6870,power am 1gb of ram Installing internal hard drivfer 50gb optical driver part built up grading ,px lb 950S BLUE RAYY ,BLING MEDIA BUYB,CHOSE READING SPEED CD - UNPACKING A POWE SUPPLY UNIT , SHOPIFY UNIY MODULE , Case and feature fan cooling Up grade a PC choosing components open computer replace component challenge damage electricity,remove before process ,scenario compatible, completed desktop system,custising PC build configured a desktop PC ,budgr PC cash - perpheraks gadgets,installing TV tuner ,HD hard ward connecu, hardware projey, windows, -aoc LCD moniy,case OEM,case raidmax gaming,cattex networks cable and accesorie,cps pose back up solutions,g data antivirus, Kingston memory solutions,maxcam secury solution ,Microsoft, tower server cabinet end closure Purpose Purpose: word display manufacture -Introduction technology, teasing compagny specialist in it components, Required market effective technology solutions custome the product security surveillance soluy, networks,point sale server encloy it components, -Mission: provide technology added value business,provide quality product , creation make different, -valur : accountability commitment quality ,honest integrity, -vision : to inspire purpose great place work member learn productive business , - partenera chanrk , Social but transformation bee compliant .. Product Guide : LCD monitor,screen size : 21,5"w/23,6,viewable image size : 546,86mm,display area : 476.(H),268,1@(v)mm, brigthness (typical):300cd/mm,contrast ratio (typical) 600000:1(DcR),response time (typical) 5ms, viewing angles: 170/160(car 10),max resolution:1920×1080@60hz, HDCP compatible: yes, input signy: analogy RGB and dvu, user control menu, enter image ration source ,up auto / down power, power consumption power ,on < 49 stsndat<0,4w,wall mounted: vrsa 100mm, mechanical function tilt ,5-29, Specii features : touch key USB ,by DcR glossy -type qori - 335 case:type ATX Min case,motherboard: micro ATX , external ATX up (up to 13"x9,6),(p4ready) -power supply : 400W Culp,P/s with 12cm fan (20+4 pin socket 775 ready) ,5,25" drive bays:3,3,5" drive hidden:8, expansion slots:7,I/o interface USB x 2,mic x 1,spk × 2 ,cooling fans front ,80mmx1, rear 80mmx1, dimension (DxwxH):410x182×425mm,M/t(cuft):1,73, -frint mount USB ,audio, high,green LCD fan, external bat : 4,5,25"and 3×3,5",internal driver bays ,4× 3,5" HD,,system board ATX form facty ,13",×10,5 , expansion slots standard ATX 7,material SECC steel, dimensionnement: 52,25 x 20,5 x 45 cm (lxwxH) - raidmax modular cabling system durable titanium mirror grade block wraps , mesh cable to mention 20 total power connector for all your computer, type : ATX12v,EPs 12v, maximum power: 730w,fans 135 m blue led fan ,PFC no ,main connector ,20+ 4 pin ,12 rails ,PCI e connector ,1×6 pin ,1×6+12 pin ,modular cabling support yes , energie efficient : up to 80 % ,over voltage protecyyes, - network cable Cat 5 e cabling: 500M solid,Uto,24AWG,0,5mm,4 pair,grey,,305 m flex or solide ,Uto,24 AWG,05 mm,4 pair grey ,,cat 6 cable .305 flex or solid Uto,24 AWG,o,57 mm,4 pair ,Gray ,to ,, Cable tester digital tester ; cat 5e, , - toolkit: j-059 long nose pliers (159mm),hy-103B micro cutting pliers + 159mm),by -330 cable blade trividr,hyp -5022 wire stripper ,hy 568 telephone plier ,8p8x/rj-45,hy-324 punch down tool ,tape line ,2m knife, by 329 wire stripper economic hy 539 soldering iron 30w,cable tester ,tweezers 125 mm, crystal screwdriver, -+,module plug rj-45/7p8c x 6 PC, plastic box ,315x255×55mm, crimping tool,Rachel type dual crimping,punch down tools, wall boxes cat signle part RJ 45keystine jack ,surface mountable ,car 5 double ,RJ45 jack surface, carb - connector ,boot sleeves ,RJ 45 cat micron connector ,standard , cables make female 15 pin VGA extenst available in ,2,0 m ,3.0 m,5./ ,Male to male 15 pin, - 1000va /2000va rack mount ups , - patch panel 24 port Uto cat 5 e panek w / t back bar , 48 port Uto cat 5 e panel w/ back ,, Battery voltage : 24 VDC, recharge tine ,8hours to 90% charger ,input voltage 110vac , .Or 220va c 25;,output wave from , pseudo wave , protection : output short city overload protection with current limiting,protection output circuit overload , 659 Va line interactive ups ,auto restart while AC recovy , provide overload protection ,compact size ligthb, automatically voltage regulator Ave , battery low voltage automatic , microprocessor control ,provide modem phone line surge protectors option , equipmt input voltage, building DC start functionalite enable ups , input commercial power range @45vac - 280vac ,AVR range 165 vac , frequency ,59 z +- 10%<, output commerce power : sine shared frequency AVR voltage range ,220vac auto sensing , transfer b,gross weight ,6,1kg ,size (mm) DxwxH,,260x96x135,, -Data manufacture data security, security technology,new top security PC performance, high security,under completed undertectabke ,self fingers printy,maximum security record test winner ,, antivirus program enginee,anti spyware ,antipgising,antiookit,child protection ,system tuning , firewall,internet security, Award technologie include double scan ,outbreak shield ,integrajitblocker ,special utility ,scan all compression file and archive formal, heuristic detection of virus, g data antivirus manage ,client ,premui support,, - client security business ,g data antivirus management server,client ,internal desktop hard driver availt 1000gb - value ram desktop memory, note book, server memory,,data traveler flash disj Free agent notebook external hard drives store Dara ,synch data between PC ,back up fil,, digital broadcasting, Serie projector , 3 projection system ,3 LCD panel ,1 lens projection system, resolution,RGB,1024,668,lam 190 ultra high pressure lamp,colorboutput 2000 lumen ,video input composite video , audio input , PCI , expression Serie , astaud performance,graphic processing ,stream processors 240, core clock 633mhz ,memory clock 2268 MHz ,memory type ,896 MB gdr3 ,memory interface 448-bit ,shader clock : 1404 MHz , bus type : pxu Express ,3 ways slu technologie,direct x support ,CUDA technologie 2 ,SLI technologie,Nvidia lumex ,dual link ,2 Nd generating architecture HDCP capable Discovery vision Purpose : Program analyse data, - adabase ,storage data , association and work file access logic ,database modification and transaction ,introduction natural , accessing database , basic rwiten ,edit mask ,arrays , arithmetic more advance report condition statement , additional statemt data manupulr natural system command ,system variable ,session ,system functionalite ,input statement functionalite data area program editore Mao,, gierachir , network model, nucleus buffet poopl.i/0! Disk actual data ,parallel process , interface programme implentation methode control ,format buffer ,record ,search buffer ,value , - SQL data manipulation language , civil and pl statement written embedded , exce read logical ,natural acess operating system - civil , ,General control block ,file control block field descrip data storage space ,up date command record is added to file new ,up date field value in fult ,manage command , - database modification : add if new record selected exist , competition uptade case , user ,1 cancel days yes ,read employee file leave = 5 ,up date leave = 0!,,reserve days ,read reserve day 15;,read file 5 up file leave ,29, transacy concept ,the limited ,rejected accoun Find statement,basic format t ,define data , employee ,personek I'd address ,end define ,number city address ,view - break statement csalary record , department code namt - compagny, Definition module: Employee T l db name f Leng s d remark Personal I'd ,first nane ,dare birth ,full address city ,zip ,post code ,telephone ,job , department , position current leave take ,leave booked ,leave start ,salary ,currency position - data area editor: define variable with t data editor , define data ,emp ,name , surname,first name ,Dept , Incode , Date natural for Unix library name ,time software AG libraries , Unix fin ,, Empl ,A,8; Name,surname ,job title ,edit Purpose: Civil and development a program, Program pli,code , - input output firm due suply ,name ,file ,record ,size implied decimal ,point indicate , name of output file record layout working ,storage nNe form ,outpy record number, - hierachy diagram and pseudocode ,program logic planned hierachy diagram pseudocode indicate module , informs to plan step ,program ,stsdard , was ,I ,o ,start 200 first ,20@8, - modular programming , program readability debugging, Program readability: , picture value coded , working field , accut total , Program specification : position , 1-4 , field employee number ,name ,office number , telephone,,type numeri aplhabdt , - enter progi: also under sudej , save program , type word , compilation - execute the program : the name input program computer : : Report on disk in order to print later stage : - debuggi on the program ;: if report is not correct ,logic error in program that correct , person number ,name office number repeat ,states was omitted from , in case error access , - instruct print report input for program data .. Output program : Record layout , take record , input ,file name yes ,input record ,implotr number ,20-30 0 employe name , 50- 60 office number , 60 telepy number, - acubol : identy progr I'd program , Uthor ,date waruten ,date complied, : This prohray print report with information aboyall information: Enviy diviy: configuy PC IBM , object IBM,input ,output ,file control ,select employee file assign to disk ,orgNizTion is line sequential Ms soft COBOL : calxuly ,computer es wage rounder = 1 hours,tariff, computer newrou d ,prepare line , move @- to no , - Engineering comIGni increase Number / hour/tariff ///current /////wage permitted///////new/// wage exceed / Hierachy program Work storage Posityreddfune was position table , occur time - procedure divisy , open input file report file ,error file, perform,read table time , Strategy Development undefined Rate your skill Magnetics Design undefined Rate your skill Project Management null Rate your skill Innovation undefined Rate your skill Modeling undefined Rate your skill Product Development undefined Rate your skill Simulations undefined Rate your skill Leadership undefined Rate your skill Mechanical Engineering undefined Rate your skill See more (3) Other applicable skills you may have Stakeholder Communication Expert The last time the skill was utilized Jacobs Engineering (Engineering) Support energy-efficient electrical end industrial south union africa .S.E.E.E.I.S.U.A Inbox tshingombe fiston Thu, Feb 1, 6:24 PM (8 days ago) to me, TSHINGOMBEKB .1.Proposal : the mendator and intergovernmental conventional. system support energy efficient electricaL industrial south union africa.. production dispatching energie electrical interconnecting 2.scope :S.eeeisua .organisation peace eco system regulation inter africa energie efficiency industrial africain. Regulation conflic hurbain municipality and city power city governement and commissioner electrical regulation load sheading regulation plant power city metering energy conflic .conformance city power regulation regulation trade industriL material trade conformance interne national commission countries and international regulation policy .safety frameworks regularities betwen city energi electrical.plant power station substation conformance internal external power station countrie and international low conformance low ..commissioner low poste job work ..regulation internal betwen inter regionaL megawatts financial .humain resource talent skill job .prof regulation conflic power city city rwong .regularion job career .tendered job supplie job international regulation tendered city power and commissioner energie electrical ..regulation bank note process analyse megawatt financial..regulation commissioner ..metering job post conflicting design low energy supplies close tendered design regulation energie dispatching low rules .planing management systems. Regulation resarch advanced desugn city power prof doctoral. Journal ligthing. Regulation conflic consumer industrie recycle support conflic rebuilding remanufactured support city power and commissioner industrial. City municipality energy regulation remanufacture annuel goal mission revision city job regulation system council reprojected case resolve peace security policy ..defense factor material city job 3.mission: mission peace international regulation atomical x bomb treat power plant .regulation job career special job school engineering regeneration retransmission system conformence interregional africa support supplie 4. vision : vision mediation arbitration commission peace interregional energie power city low treatments and job career operationel consumption regulation megawatt financial ..engineering megawatt power plant operationel 5. Goal: target cycle recycle semmester performence on job career 6.: operationel: member council union trade union engineering interafrica megawatt job.union bank africa energy . Council industrie energie conformance rules job government .. 7.module .order demolition dismentalement substation and rebuilding .breaklow unlo substation generation machinery system over system consumer ..order dismentalement metering cabling bank note ordering. Substation normalized and station power plant .energetic .motor electrogene systems. Order disarmament gun support. Destruction massive proliferation system industrial regulation remanufacture metering system cipower .or commissioner installation high voltage low voltage. Ordsr megawatts.. tshingombe fiston Thu, Feb 1, 8:18 PM (8 days ago) to me, TSHINGOMBEKB 7.Regulator :.power factor demand System energetical electrotechnique energie .electro energy ..consumer ..power city ..city countrie maximum allowed ..management demand factor ..regulation allowances trade factor industriel..compliance trade industrial manufacture control logic system operationel manufacture trade assistance..ups regulation management .managemnt project regulation commissioner - regulation industrial electronic section manufacture . - regulation science engineering steamer regulation regulation countrie conflict : regulation energie radio television compliance conflict regulation financial megawatts. Electrotechnology. Technologie energized ..city power. Mechanotechnologie machinery. Commission tshingombe fiston Thu, Feb 1, 8:34 PM (8 days ago) to me, TSHINGOMBEKB Maximum allowed city power metering consumer transformer substation city power generation city power method direct indirect regulationn maximum allowed commisioner generation trasmission power plant and cpnsumer metering industriel consumer manufacture supplier appliance electrical and substation cable installation regulation conflic generation .energie renew new installation resolve system management information quality ..resolve crime principle conflict betwen consumer and betwen plant substation allowance ..trade industrie union council engineering. Energetic engineering..regulation data system ..reg % ..voltage .. tshingombe fiston Thu, Feb 1, 8:52 PM (8 days ago) to me, TSHINGOMBEKB Regulation city power supplie tendered .commissioner electrical maximums allowed estimation years quarter 50000megawat finacacial ..regulation conflic consumer 70000megawatt imaginary bank note process 50000 megawart 50000 billion rand regulation .maximum budget finsnacial prevision resolve conflic fiscality tax incentive investigate policy anaLyse revenue budged..betwen city and commissioner investigate audit inventory metering indicator index data analyse intelligence. Regulation resolved remanufacture close bill metering..supplier design description unity ..power factor industriel electronic electrotechnique remanufacture breakdown close supplie. Remittance compliance certificate reward metering . None Professional of Electrical (Generation) Duvha Power Station Position : Snr Engineer Prof Electrical Vacancy type: External/Internal Task Grade : P16 Area of Speacialization : To provide a specialist engineering service to Generation power stations. Department : Engineering (Electrical) Business Unit : Duvha Power Station Location : South Africa (Mpumalanga) Reference Number : 2024051401NM/DVP Closing Date : 5/31/2024 Minimum Requirements • Qualification(s): • BSc/BEng in Mechanical/ Chemical/ Electronical/ Electronic/ Mechatronic/ Computer /Civil/Metallurgical/Industrial Engineering at NQF8 with 480 credits • Professional Registration Body: Engineering Council of South Africa (ECSA) as a professional engineer • Related Minimum Experience: 4 Technical experience and engineering related technologies. Skills and Competencies • Leadership Entrepreneurial mind-set Ability to build effective relationship Coaching and mentoring • Behavioral Strong drive to learn Results and delivery focused Integrity Professionalism Safety consciousness • Knowledge Related technologies Design codes and standards Engineering theory Relevant processes, procedures, policies, guidelines and legislation Engineering design • Skill Technical problem solving Analytical Cost analysis/economic evaluation Communication Presentation Technical report writing Key Responsibilities • Resolve complex integrated engineering problems. • Validate and integrate life cycle plans for the plant. • Provide specialist engineering advice/assistance. • Manage engineering projects/modifications. • Perform technical and financial evaluations. Extrusion Professional The last time the skill was utilized Jacobs Engineering (Engineering) [Type the document title] [Type the document subtitle] [Type the abstract of the document here. The abstract is typically a short summary of the contents of the document. Type the abstract of the document here. The abstract is typically a short summary of the contents of the document.] pc6 [Pick the date] 1.purpose .memo ________________________________ 1.A-A. /B.B. //CC. ///. DD////EE //////tra outcom A+B+C+D ________________________________ 1.A-A B.B. CC. DD EE A+B+C+D+c .VR1=IA×RA / Vout = - Vin0,6//IE=Ib+ic VR2=(I1-I2)×R2/ VB=R3×(I1-I2)R2/ VR4=I2×4/ Vout = - Vin0,6//IE=Ib+ic Cu+2e---Cu 0,7 si 1.VR1=IA×RA / Vout = - Vin0,6//IE=Ib+ic VR2=(I1-I2)×R2/ VB=R3×(I1-I2)R2/ VR4=I2×4/ ... /////Cu+2e---Cu 0,7 si 2.ET= R1.I1+R2.I2+R3.I3 / ET = E1=E3 ET=I1.R1+I.R2/ ET=I1.R1+(I1-I2)R3/ R=£×I÷a. R=£×I÷A IC(sat)=Vcc÷RC C=k×A×€o÷d 2.ET= R1.I1+R2.I2+R3.I3 / ET = E1=E3 ET=I1.R1+I.R2/ ET=I1.R1+(I1-I2)R3/ /R=£×I÷a. ///\C(sat)=Vcc÷RC///R=£×I÷A ///// C=k×A×€o÷d 3.IT=√IR° +(IL-IC)°// R1÷R2=1+&0T1÷1+&T1 VT=√VR°+VL-VC// Z2=√R°+L°- // Rt =To[1+&t]. RC= vcc- VCE÷IC, ///RB= Vcc-vbe÷ib B= IC ÷IB for=1÷2π√L.C 3.IT=√IR° +(IL-IC)°// R1÷R2=1+&0T1÷1+&T1 VT=√VR°+VL-VC// Z2=√R°+L°-C// // Rt =To[1+&t]. ///// for=1÷2π√L.C /// RC= vcc- VCE÷IC, ///RB= Vcc-vbe÷ib B= IC ÷IB 4).XL= 2×π×f×L. / Is=IT-IC// XC=2π×f×1÷2π×c/ A=π.d÷4// 1÷To=1÷R1+1÷R2 Rp2=1÷R4+1÷R5/. d=√4pcl÷πR ///RB= Vcc-Vbe-ve+ib Rbl=Rb2.(vcc-vb÷ib)+ib Rbl= 1÷10, Re.vbe N1=N2(N1÷N2) 5) 1÷Rp=1÷R2+1÷R3 / RC= Vc÷IC //) Rs1= R1+Rp1 Rp1= R4+R5+R4÷R5 V×R2÷Rc+R3 I1(R e× cos π+-xe×Sinπ Ze= √ Re°+Xe°///// XL=Z2=Z3 5) 1÷Rp=1÷R2+1÷R3 / RC= Vc÷IC //) Rs1= R1+Rp1 Rp1= R4+R5+R4÷R5 V×R2÷Rc+R3/// I1(R e× cos π+-xe×Sinπ. ///// Ze= √ Re°+Xe°///// XL=Z2=Z3//// 6).RSH=Im-Rm+Ish/ RSe=V÷Im-Rm VL= VP÷Z1.///// IL=√3×ip//// Pf=√3×IL×cos ///// V=4,44×Ns×pf 6).RSH=Im-Rm+Ish/ RSe=V÷Im-Rm/ VL= VP÷Z1.///// IL=√3×ip//// Pf=√3×IL×cos ///// V=4,44×Ns×pf 7..E=e1+e2+e3../ E= e×n ../ 1/Rp=1÷R1+1÷R2÷1÷R3/ I=emf÷r.t/ E÷r×n)+R V=I×R/ RB = hxr, I=V÷R ,, Vo = I× RP IT= IA+IBc Y= m×N2÷N1./// S=V×I×√3 S1.÷s2,zt=1÷1z1+1z ..E=e1+e2+e3../ E= e×n ../ 1/Rp=1÷R1+1÷R2÷1÷R3/ I=emf÷r.t/ E÷r×n)+R V=I×R/ RB = hxr, I=V÷R ,, Vo = I× RP IT= IA+IBc Y= m×N2÷N1.///// S=V×I×√3.//// S1.÷s2,zt=1÷1z1+1z 8.)VRM=1÷√2 VM=0,707 VDC=2÷π I=0,318 ×la×z×p×¢. B=¢÷A,H=IN÷I F=B×L×I E=∆¢÷∆t E=B×L×V IT= VC=I÷RC. £Integral V.b XL=2×π×f, XC =1÷2×π×f, VC= IT(-jxc 8.)VRM=1÷√2.. / B=¢÷A,H=IN÷I/// VM=0,707. / F=B×L×I // VDC=2÷π. / E=∆¢÷∆t // I=0,318 ×la×z×p×¢. // E=B×L×V// IT= VC=I÷RC. £Integral V.b /// XL=2×π×f, XC =1÷2×π×f, VC= IT(-jxc) 1÷2×la×z÷2P/ IZ÷2c2p×40÷3c / ATp=IZ÷2C2p×(1-40÷360)// V= K×Q×÷r// C=€r×Co×A/d// F=k×q1×q2÷r°// Ek=Q×V XL= 2×π×f//// IL= v×l÷j×xL//// Z2=1÷hoe-hf÷h.e+Rs///// Z2=1÷ hoe///// 9) 1÷2×la×z÷2P/ IZ÷2c2p×40÷3c / ATp=IZ÷2C2p×(1-40÷360)÷/ V= K×Q×÷r// C=€r×Co×A/d// F=k×q1×q2÷r°// Ek=Q×V// // XL= 2×π×f//// IL= v×l÷j×xL//// Z2=1÷hoe-hf÷h.e+Rs///// Z2=1÷ hoe///// 10.)N=v-la Ra÷k.¢/ Q= v×π×d B=u×o×l÷2×r/ Q =V÷d , C's=C1+C2 V=celerity×f 1÷C=1÷C1+1÷C2 1÷C=1÷C1+1÷C2, AT=Q1=Q2=V×C W=1÷×Q×V So=h×f×e×R×L÷n×e Q =V÷d , /// 1÷C=1÷C1+1÷C2 1÷C=1÷C1+1÷C2, ///C's=C1+C2 V=celerity×f //AT=Q1=Q2=V×C W=1÷×Q×V So=h×f×e×R×L÷n×e//// Zo=R×c×h /// RL//Z2=ZL. /// 13.) NP÷NS=VS,/ m=EQ(V÷r)×Q emk=B×L×Vb/ Qse=Qse=QT=Q1=Q1Q /// Qp= Q1+Q2+Q Co = C1+C2 Z2=RB//Rb° T1=RbT/RbT 13.) NP÷NS=VS,/ m=EQ(V÷r)×Q emk=B×L×Vb/ ///Qse=Qse=QT=Q1=Q1Q /// Qp= Q1+Q2+Q Co = C1+C2 ///Z2=RB//Rb° T1=RbT/RbT 1÷ZT=1÷R-j(1÷XL-1÷xc)//// IT=IR-j(iL-IC)///// a+jb= √a°+b°///// £=∆L÷L, ,£=S÷E Rt=A×e ° exp .Bt.// VA=R2+R1+R2 L=AR÷R÷∆L =R=resistivity R÷teta= r(cos Teta+j sun Teta)//// f=1÷2π×√1+Rc-R2÷L2,zd =K £=∆L÷L, ,£=S÷E// L=AR÷R÷∆L =R=resistivity ×L÷d// Rt=A×e ° exp .Bt.// VA=R2+R1+R2 R÷teta= r(cos Teta+j sun Teta)//// f=1÷2π×√1+Rc-R2÷L2,zd =K 16). tanπ=√3(P2-P1)÷P2+P2 V=w.×sin(π+Alpha I=w×sin(π+alpha ZT=VW<alpha÷lw÷alpga 16). tanπ=√3(P2-P1)÷P2+P2// V=w.×sin(π+Alpha)/// I=w×sin(π+alpha)//// ZT=VW<alpha÷lw÷alpga 17) Fr=1÷2π√LC laveg=I1+I2+I3+...In÷n I rm÷wg=√i1°+i2°+i3+ ...in// f=1÷2π×√L.c// 18). Vs =π int .b,a (y°1-y°2) Am-y=into a b (rdA) n=2×π×Nr×(w-S)÷60×I×v , I2(I1+I3)Ra+(I1+I2-I4°)×Ra+(I3+I4) Rotor = (I1+I2)V-(I1+I2-I4)° N generator = I×v÷Iv+Ia°×Ra+Ra+Is×v.I) 18). Vs =π int .b,a (y°1-y°2) Am-y=into a b (rdA) n=2×π×Nr×(w-S)÷60×I×v , Efficient=√I1÷I1+I2 I2(I1+I3)Ra+(I1+I2-I4°)×Ra+(I3+I4) Rotor = (I1+I2)V-(I1+I2-I4)° Efficiency motor = N-(Ia°-Ra+(Ia×v+Is×V÷IV) N generator = I×v÷Iv+Ia°×Ra+Ra+Is×v.I) 19. C=Q.n√£×L÷2π// v(dropR)R €=N.∆¢÷∆t //. €=N.∆¢÷∆t (drop) L.I .//// I=Q1.I1 V= Vb-Va//. V(drop -total Ta.alpha flux × Is) . EbO×flux×N×Z Efficient=output ÷inpout 19. C=Q.n√£×L÷2π// v(dropR)R €=N.∆¢÷∆t //. V(drop) L.I .//// I=Q1.I1 V= Vb-Va//. V(drop -total .//// Ta.alpha flux × Is) . EbO×flux×N×Z Efficient=output ÷inpout ________________________________ 20. vb-vA .Q÷€×d÷A.// output /// Copper loss = I×T Efficient= 1- 20. vb-vA .Q÷€×d÷A.// z peak maximum Voltage input ÷output /// Copper loss = I×T Efficient= 1- losses ÷imput .(derive partial .p÷ derive partial v)= (Alpha.p ÷alpha .v)(alpha .p÷aplha.t) / laveg=Vave÷r// VAve= V.ave÷r.l// Line = VRY- ,VRY=VYB I1=IR-IR 21.(derive partial .p÷ derive partial v)= (Alpha.p ÷alpha .v)(alpha .p÷aplha.t) / laveg=Vave÷r// VAve= V.ave÷r.l// Line = VRY- ,VRY=VYB I1=IR-IR 22)_G(JW)//inte v2, V1..p×d× R.T into v2.v1 .dv÷v ..// n.1/n2= sin .π/sinπ 22)_G(JW)//inte v2, V1..p×d×v // R.T into v2.v1 .dv÷v ..// n.1/n2= sin .π/sinπ 23).P= m×R×T÷T/. = s./// f= n×T÷2×l. Z2√R2°+SXo°/// 23).P= m×R×T÷T/. Eo÷v1=zr÷zs. I = s./// f= n×T÷2×l. //// Z2√R2°+SXo°/// 24).T= 2 π, √ l÷g F=^R).For.q1.q2 24).T= 2 π, √ l÷g // T= 2 π√m÷k.kg// F=^R).For.q1.q2÷R.R 25)..C.c÷f.m 26). Int.int.int x×y×z Dy Int 5. ,1. Int 1.2 into 3 0 [x °x+y×Z m/// F=q2×E1 25)..C.c÷f.m =C.C÷F.m.c×v÷m/// F=q2×E1 // ________________________________ 26). Int.int.int x×y×z Dy Int 5. ,1. Int 1.2 into 3 0 [x °x+y×Z 27)..Ns- N÷Ns//. R/2/// R2=SX0 ///. VR= = VL×√3 ZBC=zAV=R÷#+jxl÷#/// ÷#+jxl÷#/// VBC=l2×ZBC /// VC= VBC+VR 27)..Ns- N÷Ns//. R/2/// R2=SX0 ///..xl/2 ///. VR= = VL×√3 ZBC=zAV=R÷#+jxl÷#/// VBC=l2×ZBC /// VC= VBC+VR//// 28)P= √3×VL×IL×cos S= √3×VL×Is/ Er= I×zs Er= I×zs/ zS=Ra+jxs//// Er=IZs IRa 28)P= √3×VL×IL×cos/ Eph= er/ S= √3×VL×Is/ Er= I×zs/ zS=Ra+jxs//// Er=IZs IRa 30.). P=not (w-p)×9,81×π×D×n// IR=V÷R IN=√x-coml°+ I y comp IN= IN= IR+IR+It+IB ________________________________ 30.). P=not (w-p)×9,81×π×D×n// IR=V÷R IN=√x-coml°+ I y comp IN= IR+IR+It+IB ________________________________ 30.). P=not (w-p)×9,81×π×D×n IR=V÷R IN=√x-coml°+ I y comp IN= IR+IR+It+IB 30.). P=not (w-p)×9,81×π×D×n// IR=V÷R IN=√x-coml°+ I y comp IN= IR+IR+It+IB ________________________________ 31).O= Efficient max = k×s×cos©÷k×s×cis©+Po+k°ps F= N.P÷60///EP=E.L÷√3 31).O= Efficient max = k×s×cos©÷k×s×cis©+Po+k°ps/ F= N.P÷60///EP=E.L÷√3 32) d= E÷ 2kf×kd×kp×fz// Cos©=O÷s Mean = 3×√2÷h - vline - vline //// = √2÷2×2π ×vrm÷(1+cos©)//// Vmean=√2÷π×vdm×(1+cos alpha Vmean=√2÷π×vdm×(1+cos alpha)/// Vmean = V× √3.√2÷2π<+(1+cos alpha)/// ,,R= T-T2÷p=1/t 32) d= E÷ 2kf×kd×kp×fz// Cos©=O÷s//.vmax = √2×vrm // Mean = 3×√2÷h - vline //// = √2÷2×2π ×vrm÷(1+cos©)//// Vmean=√2÷π×vdm×(1+cos alpha)/// Vmean = V× √3.√2÷2π[gain]--->[op.Am]--->[DC motor ->-->. Tachometer ------------------------| --->[G(s)]-->[G.p]-->©-->[Gp(s)]-->[G's(s)] -->©-->[controle]-->[power conver]-plan ® Intrusion --- [ideal sensor] ©-->®-->®--->[G1]-->[G2]--[G3] -->[G4]-->® [G5] .. [G6] ©-->©--->[G1.G.2G.G4..]---[G5]--- --------H0------------ [G4]--- --------H6------------ [G6]--- ____42) so=X1+x3+X5 S1=x2+x3+x6+x+x7 S3=S4+X5+x6 Input Input / output/ register X1,x2,x3,X4,X5,x6,/S2,S1,s0/select 0, 0,0,0,0,0,0,0,0,0,0,/0,0,0 1,1,1,1,1,1,1,1,1,1,1/1,1,1, -________________________________42) so=X1+x3+X5 S1=x2+x3+x6+x+x7 S3=S4+X5+x6 Input Input / output/ register X1,x2,x3,X4,X5,x6,/S2,S1,s0/select 0, 0,0,0,0,0,0,0,0,0,0,/0,0,0 1,1,1,1,1,1,1,1,1,1,1/1,1,1 Total value 41) F ®--->[gain]--->[op.Am]--->[DC motor ->-->. Tachometer ------------------------| --->[G(s)]-->[G.p]-->©-->[Gp(s)]-->[G's(s)] -->©-->[controle]-->[power conver]-plan ® Intrusion --- [ideal sensor] ©-->®-->®--->[G1]-->[G2]--[G3] -->[G4]-->® [G5] .. [G6] ©-->©--->[G1.G.2G.G4..]---[G5]--- -----H0------------ [G4]--- --------H6------------ [G6]--- Purpose : Trade to trading: Basic trade theory fundamental design Requirements: Construction trades composition: Operationel trade low rules applier skill to skill ,, trade to trading - 40. Sabs code of practice wiring premise Safety trade tools , safety I rules harss play machine building sign fire smoke , injuries fire hazard warning,cut space save damage of good is prevented. - cell advance construction simple efficiency full load 976 silent operationel Transfo little care : -open -air cooling oil cooling, - transformer assumed to have no loss et. - secondary cell advance. Rechargeable greater capacity than primary cells ideally suited emergency back a application la get life disadvantages more expensive than primary cells regularite maintence periodic charging traditionally less suited for portable application, - code colour resistance : sketch IEC circuits carbon resistance potential variable capacitor ,zener diode ,pnl transitor battery cells unity polarization carbon extrinsic - yoke ,poles sgoeas bushes backwards in the motor . - moving brushes in generating poles field poles series . - number of pairs of poles used . - strength magnetic field. - rate magnetic field . - rate magnetic flux cut by the moving conductor, - number of active conductor - effective field flux reduce armature as load , generator. 41. Engineering drawings : welding PC aides draugtinf ,join metal Free hand boxe screw thread , - arc welding gas welding resistance lap joint ,T joint career joint butt joint Screws threads , - correct linework accuracy neat first angle orthopedagogic projections coupling projection machining . -42.. generator ward Leonard motor generator system . Shunt generator used where constant voltage is required. - series generator a booster on DC line transmission line ..flux armature . 43 .trade domestic appliances . - washing machine immersion water heater protection steel conduct pipe earth 44. Moving - iron instrument ,non linear scale measure DC and AC cheap robust affected by stray damping by air . 45. Moving - oil instrument linear scale measure only DC expensive very accurate damping edy , 46. Convert AC generate output to a pulsating DC and act as , period time peak value cosinys .47. illumination high pressure Mercure vapour discharge lamp ,siduim vapour discharge. Cold cathode neon - AC current theory, Serie RLC impedance phase , -48. three phase AC system wave supplies -49. transformer secondary primary. DC machine test conducted. . switchgear and protected device :funci and operation induction. -50. application of induction disc relay . current and voltage break capacity of . -51. reverse phase relay rotation of a three phase line they operate differente power level usually work by a solid 52. AC machine, 53. Measurements instrument electronics. 53 material used in manufacturing of semi conductor device. 54.Special characteristics : Def . special arc furnace transformer power requirements. 55. Control system like all other components on electrical network allowed for process to monitored and regulated from a remote. 56. Special characteristics controle system operate environment controle system or overall electrical. Static controle analogue . 57. Electrotech : principle nuclear positive Lenz lot directly proportional yoke download. Type material algebraic sum EMF - principal low change in the magnetic flux linking with . - movement of conductor in a magnetic field. - increase decrease of current circuit . - carbon brushes, graphic brushes ,electrographes, copper graphite. Separately. Efficiency full load ,97 moving silence magnetic circuit winding oil tank protection refrigerator, -57.1 connecting electrical machines practical tips . For connecting -make sure you have rigth joint check size of logs . -Make sure that you have a crimping .fit purpose joint. * Installation core operate . * Installation care and inspection of equipment locating t rigth tools for the jobs.. * Make sure that you know which equipment,keep your tools box organise stored your tools safety clean in good working.. * 57.2. Generation and supply of AC * Power fact correction low power factor increase decrease electricity bill. *Method of power correction capacitor basic generate another method of power factor synchronouse motor be set to operate in logging on leading. * AC synchronouse machine synchronouse converted mechanical energy input induction machine. * Load Brid connectioning charge series connect to shunt . - speed and torque: - torque and power: Load sharing divider load .load among a set to TSHINGOMBEKB 50. Cpd continue learner Calculus Kirchoff, e1 source, RLC Serie RLC ,i1,i2, dq÷dt=1.// L×d°1÷+R×di÷dt+1÷C=dv÷dt (L1+L3)×d°i÷dt°+(R1+R3×di÷dt+(C2+C3).i1-ld°i2÷dt-R×d1.2÷dt-c3.12=e1(t) /// (L2+L3)×d°i÷dt°+(R2+R3)×di3÷dt+(c#+C3)i-L3×d°i#÷dy-R3×di÷dt-C3.I1=e2(t) t=0 and t ,t = o,2 e1(t)=100 sin (120πt)...// Contour symetry Int .H×dl= sum n1.- n2.i2 -;a Di/dt detection circuit DC unidirectional breaker di÷dt , V= R.i+ L×di÷dt I=(v÷R)×(1-e(t/T),, differential the above value , diffential the above value Di/dt = (/I) e the maxim , di÷dt , di÷ St) max = // Potentiometer coefficient reducing voltage integration factor,sum integrator dx÷dt. TV,,E=™L.dI÷dt In +1÷c integral dt./ L.di÷dt+R.i+1÷c integral.1.dt=E Rd÷L.dt+1÷Lc=d.y.÷dy do=[f(x-y)St.. 5dx÷dt+3x÷5=0 out put integraj dx÷ St = 3x+5 ________________________________ ∆v2~ V20-V2=Rs.I2 cos alpha+xsls2.sin..alph √4∆v2=√3(RsI2.cos &2+X's.I2.sin &1/ ________________________________& f(x)..d÷dx ×f(x)../ d÷dx[f(x).g(x)]=f(x). (g)+f(x).g(gx)/ a(x+b÷2a)=a+x.x + b÷a+(8.b÷2a).(8.b÷2a) A÷ax+b+B÷(ax+b)(ax+b)+...G÷(ax+b)n// Firs second order dy÷dx+Pay=Q a.(d.dy)÷dx .x+ b.dy÷dx+cy= f(x).// Volum.∆v π✓.y.y∆x VX= π. Inte. b to a (X1. - x2) dyb..vy = 2π X= Am-y÷A= into (a) .to b rdA÷A, // (x,y)= f(t); g (t) ds÷dt= v ,,dv÷dt=d.d.s÷dt// f(t)S= 40t-5.t.t f(t')=40-1,,0.t ,M ________________________________ V= π.r.r.h//. r.r=L.L - h.h cone high X.x + r.r= R.R..V=1÷3.π.r.r.h =1÷3.π(R.R-x.x)(x+R) =1÷3π[R.Rx+R.R.R-x.x.x-Rx.x] Partial differential Z= x.z.z.y.t.. Lim .&v1÷&h=dv1÷dvh. h--- Volume cylinder ,,,unit Gravitation centroids.. x+y+z=1 Double integraj ,,single variable sum I.double, Sum j f (x,y) y=(x,u@),,,y = (x+§x)and ∆y-y , u (x,u) total derivatives, dy÷dx=dy÷du×.du÷dx.. partial constant ________________________________ Inspection of work equipment :to indentify wether equipment can be operate maintened safety , deterioration , Check risk safety in case inspect where significant and safety installation, installat reinstallation deterioration or any other need for inspect frequency should . - to operator and other equipment installation result - work equipment that requires inspect inspection b, - reg where the safety of work equipment depend . - intervat equipment. - wath should the insoy. Deoenyon type of work t use any manufacture recommanday the advit ,trade sourt ________________________________ Load Z total = ZC/)(ZL-UE).. VA=S+VAR -------.S=P+Q// ________________________________ gradient DE fonction &f(x,y)+&y=&÷&y,, In|x|+C Int l/x ________________________________ Equivalent transfo E2= I2×z2+v2 // E2-v2=I2×Z2..// Vre%=E2.v2÷v2×100.. V reg%=I2.R2.cos$+I2.x2.sin$÷v×100 ________________________________ 50.) Cpd development skills Z=√R-(xl-xc)/ V=Z×I, Z=R P=R×I×I V=U×√3 I=j×√3, U=V÷√3 I=j×√3 J=I÷√3, J=IL1, IL 2, 3R..,, R :3,3 xl = 22×π×L×f XC=1÷2πcf ZT=(1÷z1+1÷Z2+1÷Z3).. =G1+G2+G3)..1÷GR+1÷G2+1÷G3.. ________________________________ Engineering electrical load system R.I.I=3×R×I×I,, R×I×I÷3,, I=j,, I=j×√3 Load = √3×R,,I=j,... I=j×√3 P=R×(j×√3) P=R×j×jx3 P=3.R.j.j E=1÷R1+1÷R2×j×j×t E=R1+R2×j×j×t E=3×(1÷R1+1÷R2)×j×j×t.. E= Em×sin×w.t E=j×3×R×j×j×d Z=1÷Z1+1÷Z2+1÷Z3--- G1+G2+G3,,Z1+Z2+Z3 E= 3(Z1+Z2+Z3)(j.t) E1=(1÷z1+1÷Z2+Z2)(j×t) E1=(1÷Z2.1+1÷Z2.2+1÷Z3.3)(j×t) E2= 1÷Z3.1+1÷Z3.2+1÷Z3.3)(j×t) ET=[1÷z1+1÷z2+1Z3(j×t)]×[(1÷z2.1+1÷Z2.2+1÷Z3.3)]×[1÷Z3.1+1÷Z3.2+1÷Z3.3](j×t) [Z1+Z2+Z3(j×t)]×[Z2.1+Z2.2+Z2.3]×[Z3.1Z2+Z3.(j×t)] ET=1÷Z1+1÷Z2+1÷Z3(j×j×t).×[Z2.1+Z2.2+Z2.2+Z2.3][j×j]×[Z3.2+Z3.2+Z3.3×(j×j.×t)..// Serie LC ,,capacitor ,resistor load series parallel impedance low related Evidence low energy C=Q/4 ..Q=u×.u×.c×w Delta=Q=3×U×U×C×w We=3×V×V×C×w CV=3×c∆ ________________________________ Ep=P×l. E1+E2+E3.. Q= iron ,,Qin iron I A,,IB+IC,, Diagram fresnel ,, In =I1+I2+I3,, alph=0,,V2N,,alpha =90! Vector fresnel I1=j1.2-J.3.1 I2=j2.3-j1.2 I3=j3.1-j2.3 I1+I2+I3=0 Delta balance I=√3×j× J1.2=U=z.1.3 V=u√3..IL=Iz ,, VZ1=VZ2=VZ3..I=Z,I=IL=IL=V÷Z,,V=U÷√3. IA=V÷2÷T. u= u.o×2×cos(wt) I= i.o2 cos(wt+j) P=u.O×.cos w(wt)×Io#cos(wt+j) =u.o2×I2×o×cos(w.t)×+(wt+j) U.2 .lo2×cos(w.t)(wt).×(w.t.j)(w.t.j) Layout fresnel V1=Vo×2×cos(w.t) V2=V×cos×(wt-2p/3) V4=Vo2.cos(w-4/3) .P= (U×I×cos)+U×.I ×cos(2wt+s) K= P/s,,K=cosj.,A=V×I×sin Cos(2wt+j)+cos(#wt+j-4p,cos wt+,j-8P/3.. -process high I2.2= J3-j2, I 3 =j1-j3,,= Vk.3 -balance Pbskance , P= v2+v2.I2+v3.. V1= Vo2÷cos(wt)×i=io2×cos(wt+j) V2=vo2×cos(wt-2p/3) P1=V×I[cos j+ cos (2wt+j) P2=v×i[cosj+cos(2wt+j8/3) P<p Qph2=uph2×Iph2×sin@2= Qoh3=uph3×iph3×sin@3= QT=Qph2+Qph2+Qph3. Determine impedance. Ph1=uph,1ph,1,cos Ph2=uph2×cos×ph3. P= ph1+ph2+ph4.. Equilibrium Vab+Zs.ib=vab+Zsla VB+zS.Ic=Vbc+Zs.ib VCA+Zsla=VCs Vab=vbc=vca=IB=IC=I Za=zb=,Zo Wa=Vab×Ia[cos(30°+q)] WC=Vab×Uc[cos(39-q) Wa+wc=va.ia[30+q)]+vbcl [cos(39°+q) Wa+WC=vl.×il[cos3o+q)+(cos30) Wa+wcvl.il (2cos39cosq)=ox3×v×ipf -dephasage ,129,2,4,6poles. V1(t)=Vmax cos wt/ V2(t)=vmax cos(wt+3o) V3(t)=Vmax cos +(wt+60) V4(t)=Vmax(wt+90) dv1(t)=integral .dv max ×cos w.t dv2(t)= integral dv max× cos (wt+3o°) dv3(t)=integral dmax cos (wt+60). dv4(St)=integral max cos (wt+60) Installation generator g1,2 ,transfib kWh , back ,,retard ,avant , clockwise a+bi .x+in,,complext real power factor ,apparent power factor Cable line a+BJ,line impedance xj resistance capacity parallel connection cable phase beutraj ,power between phase phase impedance a+BJ ,,line 2,3a+bi,,line neutral a+bi,, Construction vector fresnel flech robot scater drawing vector quantity phase a,b,c ,, ________________________________cpd applie to trade ,,and trade to applied safety ,percentage correct Applied trade test to trade company theoretical mathematics trade theory relevant trade test on the job supervisor Commision Tender value point relate years expert certified trade,10point clear time frame ,clear project plan time plan responsible of team , equipmt workshop Log book apprenticeship Module trade to trade skill report phase trade ,1,2,3trade test,module code ,ovject,criteria tendered Safety area join crimping fault,, Db fuse AC ,motor contruj retain fault fault applicable to oanrk fluirencr ,isolator ,wat unclud rack flexible conduct - code man power kefit, not dry joint no damage nibsolder all safety adhere testing instruments comductur 'cabkevmake off PVC armoured up to 16 mmm core 1200v lug join rating correct ovx - objectivjty relevant colour marking correct sabs caractere GAZ welding piece nozke GAZ lifting,.chain ton max work not exce selected readings all safety applied ,- criteria recall type battery percentage parallel correct manufacte system fit component procedure ... El1 electronic components wire watt carbon metal oxide thyristor 1construction solder.. -correct according manufacture adhere procedure cambdr correct test average value peak frequency RMS , Control main circuit line start dejtad phase rotation, Cad xlpe cable 2099!test gears ,, ________________________________ Cpd learner technical. equivenlent electrical hydraulic .. Integral countiur infinitive Stock Maxwell 50)cpd Engineering -basic concept introduct discovery: voltage electrical current resistance power, conductor between line U=√3.uph - key term : law regulation ohm low state I= u÷ib, -Kirchoff low: sum bode junction in sum of current node n I1+I2+I+3(-,i4-I5. Coulomb low :charge |F1|=|F2|=KE.|q1×q2. -Right hand rules thum point direct point reminder finger field ,direction wire First left hand magnetic induction second left hand left magnetic - resistors connection schema ,Serie connection /,parallel //connection Amperage I1=I2=3,, // I1,2=I1+I2 Voltage U1,2=u1+U2//U1,2=U2=U Resistance /R1=R1+R2//1/RR1=1÷R1+1÷R2 -Joule Lenz ,Q=I.U×R×t Amount heater -capacitor connection Scheme ,/serial connection //parallel Electric charge ,q1,2=q1=q2//q1,Q,2=q1+q2 Voltage /u1,2=U1+U2//U1,2=U1=U3 Capacitance /1/C1,2=1÷C1+1÷C2 -ligthing . Incandescent ligth type ligth /ligth socket base //lumen lux///color temperature////led start Electrical ligth construction glass inert tungsten support ,electricligth order filament oxydatiin . Manufacture 1,5 volt principal heating power / incandescent lamp source fluorescent lamp, halogen lamp ,#00-409 lamp ligth ,dischylamo service///ligth socket onde noise device ,E27,G4///lumen device total from////color temoera. - cable and wire Wire color/ type of cable onde wire//wire connector/// IEC 60446 basic saftma. Power marking IEC 60442007,2019IEC 60444 L1: brain Gray ,// cable jacket ,wire coaxial cable signal cable flexible filled heliax non metallic ribon cable insulator ,stripe /// Zone special danger soldering screw terminal ,4 wire nut terminal block bolted wire connector - db - power station and substation electrical substat. Nuclear power: no install energy schema of operationel Plan thermal power : generate electricak energy by converty chemical, hydraulic power wind ,geothermaj -boiler turbine power combine cycle / spp solar power plan is on engineering structure verting radiation ponek ,Vacuum tower type ,/wind power Serie connected osgir coak - electrical

measure: -Volmetre instri use mesure analogic principal electromechanic,AC DC pulse selected, -ammeter device for current , - ohnneter device , Multiple measure functionalite analogic Dmm, Clamp meter device operation based 10kv,, Electricitt meter device measure electric energy install ,2,5:0,5: - mechanical energy : transformer static device convert AC ,expansion insulator ,transform ,convert , Motor electrical energy operator shaft.-generstor convert mechanical energy from AC power solar - ground system electrical engineering DC ,isolation ,n neutsj, potential - Protection and automation device:circuit breaker,rcd,rcbo,sod,voltage monitor, magnetic,fuse, - socket repair/ installation of build // installation the surface mounted socket ///switch installation /Conche or brick, 1)make a Chanel for cable router installat junction,2 fill the recession labell,fill the remaining,drywall marking drill hide back connect, // Fix the base to the wall cable into the base , connect fix the sock install,/// Make the Chanel for cable mounted installation the junction with alabase mirror install fill remayb ,, -over voltage: I2 and I3 sum voltage u1+U2=389,P1+P2, /IP code. IEC en 60528/ / time current character time (1,13In /// tools work wide socket -Schem electronics circuit Switch (1and ,2 button,switch (3), pass through switch ,two key pass ,socket ,socket ,dimer ,motion sensor ,impulse relay motor connection,electricity - electricity cost calculator,device power used , daily use time ,price for kWh cost per hour month days week ____ Cpd ..basic electrical continue I1=V2÷|ztotal|<- teta I2=V2÷ztotaj<(-120°-teta) I3=V3÷Ztotak<(120°-teta) V1.2=v1-v2=(VLN<O°)-(VLN<120°) V2.3=V2-V3=(VLN<120°)-+VLN<120°) =√3.VLn< -90°=√3.V phase V2 V3.1=V3-V1=(VLN<120°)-(VLN<0° =V3=.Vln<(30°-tets)-(Vln<o I1.2=V.1.2÷Z<(30°-reta), I3=V2.3÷zA<(89-o), I3.1°V×3÷Z.a I.3.#=v.3÷ZA<150. I1=U..,I1.2-I@.2<129,v3.I2.phaae 3+39°= Advanced system diagram on line Design draw breaker type .v max.max R=Z÷√x.x÷R.R+1, X=x÷R×R, Full load no load losses ,phase fault,I3,phase I3phasrE÷X, ILG,, I÷XS=1÷x+1:x+1÷x=3÷x,, 1÷RS=1÷R1+1÷R2+1+R3=3 X's=x÷3,, xs÷Rs=xR= gen ,x÷R, symetrical b Voltage system power ,Q=P2×tan veta Cpd, theory experimental, Task lab sign domestic and industrial Engineering lab electrical workshop. Power systems.: electrical shop tools on precautions practical is discipline study design - application equipment systeme - solid bar copper wire Awg, 10tp49, Normal diameter 2,6to 0,76,cross section 5,39. -assignment load calculation. Application appliance / unity //power rating /// rating ////daily usage /energy consumption. Fridge tvfan. -lab electrical standard wire size..18aw to 1, Assessment wath is gauge of wire used exercise b.. C=<1÷36.lin ./____ Engineering studies practice 240 ,month n diploma NQF Applie saqa to isat Practical purpose lsat,scope mark off basic engineering,topic operate and monitoring grinder machine Produced simple Sub task , activities time frame Manufacture size,time ,marks Resource requie. National Where appropriate material undertaking . Labels. cpd ,gov body insurance applie to applied trade to trade Qualifications framework equivenlent Assessment frame. National diploma engineering.credit accreditation,policy criteria minimum maximum ,, Equivenlent trade license: to trade license translate ..award equivalent Divide job ,divide task ,divide operational equivenlent Phase preliminary phase final ,semi final Time competition ,cycle recycle permeant limited continuity function hand book -Material strength test material -Scale ,module word Interpretation drawing scale drawing interpretation, building Geodesie 1/100, 1/10, projection reduce size mass rules relate rules re projection planer scape Scater ,flow shoot Cpd : body qualifications framework Statement of work experience Log book , instruction programme national , level Calcul evaluation equivalente Credit entry credit exhibition outcom years // evidence Experiemental 3years equivenlent ÷ Comparability psychometric : Calculate time table ÷ Id calcule: calculate NQF level 360 credit . Qcto group calcul evidence group qualifications: 6years ÷2years =3 years equivenlente Frame job years: Framework handbook . quotatien intellectuel. Credit entry 360:÷credit 180÷=2 credit awardc,percentage evaluation 50÷100=2. Level Studies engineering. -Work where appropriate a applying lubrificT correct assembly ,to assembly in accordance with specific,standard operate: -where appropriate applying packing and or sealing material in accordance with specifications operate procedure : -inspecting and checking the final assembly for conformance to specification.1th,2,th -where apprit returning the final assembly to use :1th,2th,3th,4th, -diagnose and repairs analogie equipment and components date sign .look for evidence confirm skill .: -Diagnose and repair and skill : -Obtaining and following relevant circuit diagrams Manuel specific schematic: maintenance ,: -locating reading recording and diagnostic buil in fault .: - obtaining error code interpretation documents running test functionnning and recording fault and equipmentb built test .: -Checking electronics equipment sub assemblies: -Component connection and termination for conformance to specific . - removing and replacing component : -recording results of test understaking on electronics equipment: :Isolating electronics assembly from the power .: -adjusti g turning and calibrating electronic equipment sub assembly.: Returning to service and testing to specification the repaired electronic equipment sub assembly.. - using language and literacy skills to provide brief report record result of test, Reproduction fault symptom and verify fault using appropriate test. -Retiring repairs,maintain service,look for evidence skill : -Look for evidence relevant circuit diagrams manual mainteecird supplier.: - maintenance error code interpretation documents running test funct and fault and equipment status indicated built in test checking electronics component .: - interpret technical drawing look for evidence skill in checking the drawing again job requirements related ,procedure interpreting job chart ,docuy checking and clarifu task relate : Undertaking numerical operation geometry date sign -checking materuaj exist: - making termination ,: connection to specific manufacture and regulatory , adjustable marking tagging and calling wire conductor and connection to specification ,: -connection using language and literacy skill to complete and routine information written job instruction . -Using measure for checking connection and components binstall and test electrical wiring . Code trade : job specification pertaining system operating and relevant plant personal with respect identify deflecting control fault deflecting in the control for correct loop corect operate: - relevant pneumatic electronic circuit. Diagram .testing monitoring recording resnse control system .using appropriate fault diagnosis technical procedure ____ Methode resolve equation , no phass mesureing and measuring evaluation,, 1th,2th,3th,4th Fault find low Kirchoff: find currentlooki g evidence circuit diagram labal .. calculation loop sum .. equation: E1-E2=I1×R1+I2R2+R3I3 E2-E3=I1×R1+I2R2+R3.i3 fund knowledge value . _ phase step lreleass unity competency package Cpd: qualifications electrotechnology -mounte and wire control equipment Package performance,evidence requirements ,applying labelling and numbering to cables and using termi number in accordance indystryev, occupation health and safety ohs and wirksb deal unplanned procedure,selectbswutch heard and control wiring schematic ,, ____ -undetstand electrical wiring labeling doblabek code non metal conduct body partiebmean insulated conductubgb Indicate size gaugeb,voltage rating wire size,GB,wGbmateriaiv Qualifications: criteria score description tools : excellent termination: Learner outcom testing completed: 14-2g : two insulator ground 14,, maximum 600volub, - underground cable feeder inside wall if burial in ground, - install conduit bplastic insulation,T:thermoplastic ,h eater ,w,x,nylon, synthetic,c ,rules doorbligthung ,buried PVC ,low voltage inch , -maintance repare planned measure instrument components , Diagnostic and repaired documents -,procedure component approprieb system. director. Manufacture test review and approval before report . Responsibility: originator is responsive written document . Obtaining a DC number , priority to DRC routing - material requirements are identify : Description skill knowledge look for evidence confirm skills yes or not: - checking nthe drawing agoing job requirements in accordance yes it note operating ,where appropriate procedure charter list and other applications yes or not ,refere documents,check clarity test ,operation geometry and calculation formulae,object represented in the drawing,unit of measure bin presentation drawing ,action to understand in response ,material from which the objet made hazard -:base assembly drawing us identify work relationship.. -relatuoj contains. -installatuon drawing: provide compagnj position, exposure diagram . -Schematic assembly drawing: pictures..machine drawing ____ Manufacture and inspection contractor final inspection nteat quality plan document b,docuy record and information of inspection testing evidence confusioning acceptance . checking product used quality random check listed pulling nxhexjing verifying brequireb,shipper ____ Apply where appropriate apply job research hiring compagny piece by piece variable including b, understand quality defect non conforming borior next assembly determination producti Electronic .cpd: qualifications integrity body .- undertake material ,cable laalling Conductivity resistivity labaled -Thermo Cooper insulation : Correct formulae task: R=resistivity ×lenght ÷acros section.diameter length gauge. Module young , dielectric test Material elasticity plastic Matter GAZ :Liquide ,solide ,gaz Q=.permeability insulator. -Chemical PVC polymer vynic coutch ,ch.molding job appropriet. Q=i.×u.×t...test Q=m.×c .×t∆ draw ENTRY CRITERIA TASK BOOKING MAGAZINE ID ORDER BOOKING TOPIC BOOKING COST BOOKING TOPIC PROJECT COST COMPAGNY DESIGN Discovery sciebono 16pg review R Assessement Career R Scie bono discovery centre , scie bono science career cente my journey of self discovery Discovery R guid Assessment considerer R How to build your self a bridgth technical future Consider atechnical career let get down to to work how do I play play for my th fact how to built your self R discovery book TOPICS CARER Planning R -workplace readinees ,module 2 career development prticipale R Activity example tip toolkit R Topics: career planning , wath is career yourself - Exploring your option - Making informed career - Take action education skill civi Birthday parties Id guid Assessement R2200 R2500 Planetarium paking Clumbing wall package secret lab Merseta , inseta , Guide Chieta Assessment R Manufacturing engineering and related service seta Determine level framework manufacture level subject open ,vocation ocuupation , skill program , registration learning , rpl programe registration difference Occupation tvet college list Skill employment unity existing emp[loyer Minin qualificaion Saqa , -civil engineering saice -science and technologie / nrf/saaata R Guide joint the dynamic wanted of mining and mineralised Topic:s building concret road way municiplity Topic: nanotechnologie electronics nono science concil science , material semie conductor safety , transistor computer memo rom ram , Topics industrie , industrial , electrical building draw Gr0 tshingombe fiston ____ Re: New message from &quot;SAQA&quot; ____ foreigninstitutions Mon, Apr 29, 2024 at 8:04 AM To: "tshingombefiston@gmail.com" Dear tshingombe The purpose of this foreign institution's enquiry service is to give some direction regarding accredited and non-accredited foreign institutions. Please go to the following link: https://www.dhet.gov.za or access SAQA's searchable website database, the link is https://regqs.saqa.org.za/search.php?cat=qual for information pertaining to the accreditation status of South African institutions and their qualifications. Kind regards Authentication Services SAQA The National Qualifications Framework (NQF) Act 67 of 2008 mandates SAQA to provide a foreign qualifications evaluation and advisory service, which it does in accordance with the Policy and Criteria for Evaluating Foreign Qualifications within the South African NQF, as amended (March 2017). Section 29(a) of the Policy and Criteria stipulates the requirements that a foreign awarding institution must meet for its qualifications to be recognised. ____ From: SAQA Sent: Wednesday, April 17, 2024 12:11 PM To: foreigninstitutions Subject: New message from &quot;SAQA&quot; Full Name:: tshingombe Email Address:: tshingombefiston@gmail.com Country Enquiring From:: Congo {Democratic Rep} Purpose of Enquiry:: Check status for further study purposes Institution Details:: st peace college afric institut police Attach Document(s): https://www.saqa.org.za/wp-content/uploads/elementor/forms/661fa039d9235.docx Website Address:: www.tshingombe.com Institution Physical Address:: markadet street president Comments:: Gmail tshingombe fiston RE: appeal application qualification occupation n diplomat award dr congo leaver 2016 submission and transcript certificate record supplementary .;.rsa completed n diplomat studie engineering n4.,n3;n5 n6.. ; quality insurence body irregularities in pr... verificationsletter Tue, Apr 16, 2024 at 3:20 PM To: tshingombe fiston Good day Thank you for your email. Kindly contact Client Services: Contact Centre Support for assistance. Foreign Qualifications Evaluation and Advisory Services South African Qualifications Authority Tel: 012 431 5000 - Fax: 012 431 5146 Email: dfqeas@saqa.co.za From: tshingombe fiston Sent: Tuesday, April 2, 2024 7:46 AM To: Transcript Requests ; Thaga.d@qcto.org.za ; mabunda.l.l@qcto.org.za ; Central Office ; SAQAInfo ; QCTO Verification ; SAQA Verifications ; verificationsletter ; SAQA Verifications Subject: Re: appeal application qualification occupation n diplomat award dr congo leaver 2016 submission and transcript certificate record supplementary .;.rsa completed n diplomat studie engineering n4.,n3;n5 n6.. ; quality insurence body irregularities in pr... Project commencement .completion step.step -you appoint eskom approved service contractor supplier typically register soutg africs council. Step you submit the finak project design .in linevwith contract requirements to eskom step you start build .step eskom conduct quality assessment. -explanation : customer care cs online ..home help how to contact .registration need .. -account numbet :eskom account .password .. Pre -paid meter numbet .pre paid number . - 2 tarrifs and charged .eskom critical peak pricing tariff pilot phase .pricing document tarrif princinp related information generator .retail tariff plan .reseller contact links 2023 /2024increase nationaj energy regulator has determined followed tarrif increase to alplier to eskom direct customer tarrif charge .. -customer category local authority tariff charge affordabilty homeligth 20A.. -affordability charge ..eskon submitted proposed change to its tarrif to be updated cost of supply study and strucfural charge excepted introduction: □□□■□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□■□□□□□□□□ Integrity: comprehensive approach to energy management business .advisory service provide information financiak assitance goverment grant incentive tax rebate operationel growth .trimmining shify save capacity =============================== - my application..position contactràct .managèment me ..engineering assist.. On Mon, 01 Apr 2024, 21:01 tshingombe fiston, wrote: Explain:G rèport supplý stàtut apply to connected your generation to electriçity newtork new energy technologie solutiòn in rsa provide role in the electricity value installàtion buildiñg own electricity connèction eskom offers. A self build connection projeçt enable natìonal ğrid .switch on a pòwer new self pròject aŕe design .. -a customer saqa undertaking one self project are designed.undertaking multiple customers undertaking . -flow checklist to ensure .small scale embede generation .scale connection.your to grid integrited electricity system anew energy consumer generating and distributing own energy installation . -explain generator licensing registration generator neteork .eskom initial configuration cater off grid connection assist .embed embedded generation tarrif charge we have a selected charge that scale embed installation . Explain .application process trained small sure your generator . -nersa size licensing and is utilised as back up source electricity during power interruption that is not grid no point of connector to irrespective is of size ..more100 kw ..but not point of connector irre.generator has a maximums capacity of .100 kw but 100mw..has ppint connection you are export grid maximum period of 36 month size mentioned was exempl.licensing prior generator network configuration.. Selection generator network config your product regulation ... -An off the grid system off the grid stand alone system does not have a point of connection that tje generator to the eskom electricitu distribution newtwork generator is there for completed.. - explain .phase encompassess primary plant connection work establish scada testing and commisioning plant ensuring compliance code standar relate ipps. -the project execution phase is executed according to the milestone schedules timelines construction completed.project is ready to grid connect.grid connected date gcd .commissioning and energetizing to achieve grid connection as stipulated in the milestone schedule time line. -test and synchronize .test is undertaking to ensure compliance and commisioning toword commercial operation . -commercial operation date cod project commer3 connected and ready for operation the ppa commercially.. -operations phase . The role of gay post grid connection is to ensure that all activities necessary for the safe reliable and optimal operation of the ipp plant and eskom network are communicated and carred out in manner that ensure long term sustainable .value creation for both partie. -explain role of GAU is to ensure that forecasting date schedule unscheduled outage maintenance plans switch and isolating procedure and angoing compliance report are communicated between eskom .. -explain conductor type allowance electrical ..a transformer static piecr . -explain IPP : connection process consultation and application phasr the grid connection process adress the need for consultation .with IPP developers consultant to advice on potential. Explain.It adress the process requirements clarification as welk any briefing notebstandard. Explain .estimated project cost and the associated agreement ipp.submit aplication .the ipp develope completed or revise an application with requirements provision completed assurance of the rigth to de develop propose .developed submit on application . -review application and request additionak info. - quotationn contacting phase issue .ipp cost evaluate accept decline desigb concept prelimine desigb.eskom arrages scope cleare.. - raise and pay commitmeny paybself building projects .business customer subject optionej allon ttiming of connection cost . - explain apply the contractor appoint accredit ensure that correct equipment quality work adher to eskom stand no work allowed on upstream asset substation . -step document eskom responsability in regard saqa undertakinh self building electricity connection.responsabilty selected site rout of project .obtaining land rigth inclusive of statutory .doing environmental impact study and obtaininf doing final designand risk assessments..project construction and control plant contractor managing all appointed stakeholder constructionelectriciting . - explain eskom responsability. Accepting the site route selection project ..standars and specification relating to site doing work existing final project . -doing quality ckntrol and monktoring construct work .doing site inspecetor . Step .htpp eskom equipment specification design and drawing eskom electrification standard ..eskom guid . -step 3 describ describes and motivate your project get a specialiste . -Name project :tshingombe tshitadi -background :expo science -reason bhilding .visiting career student experimental working shopping. Electricity geographix mva. ramp up schedule ..... -voltage requirements type of conductor used substation transformer and their size estimated project .conceptual level summary of the component of the electricity connection construction preferred. -step4.prepare .. E1-E2=V1+R1.I1+V2+R2.I2+R3.I3 E2-E3=V1+R1.I1+V2+R2.I2+R3.I3 Network planning report or business casec report motivation .completed basic or preliminary design .infrasture in line with eskom standard design project risk assessments report. -step gather the follow drawing copy id compagnybtax clearence .adress relever .applier large projectv quotation .appliervlarge project cost estimated supplier agreement quotation reflected project self build builds. Step eskom authories the project ..initial the work eskom supplie appòint submitted final project include contracted re On Mon, 01 Apr 2024, 19:36 tshingombe fiston, wrote: Purpose : new building load shedding instage du to high demañd or urgent maintenance being performed at certain power station directed municipality energies your monthly electricity bills good environment loadshedding ligth maintain . Energy saving tips for kitch appliances .use geyser smartly enerģy tips fòr ligthing enrgy tips swimming poòls -data portal eskom ..the sysþem operator ensure that stability of the natiònal eleçtricity grid is maintàined . -transmission plan . at all time by balancinģ thè supplý of elecþricity demand side this donè by chanĝin home amount of electricity being customet sècond of the day. To importancr anticipate how much electrical generation oggt over rreduce customer demand side supply side ..usàge renewable data form .. - explan and additional power supply ..apply for an electricity connection existing and çustomer to natìonal power grid as quickly implemented long business .plans in thi casè residential applý for an electricity city coñnection strategically On Mon, 01 Apr 2024, 14:49 tshingombe fiston, wrote: New.build loadsheding ge 2 in sòme area du to high demand or urgent maintaining being urgent maintaining being at certain power station direcþ customer muñicipality. Power energy implentation energy On Mon, 01 Apr 2024, 14:27 tshingombe fiston, wrote: -explain fire alert construction 2006 . 4 ×148 mw unite tank 1300 -1400 liþre recòrd 18 month can operate in synchrone condenser opèration requlating the fluctuation in the ñetwork voltage simiĺar station turbine is 9,45 and 4.1 m diameter combusþion chamberting 6 tone each generation weigth 323 tones the exhaust static is 30 m high diametre 10 m in diametre màximum temperature realise 560 degre fuel to ankerlige tanker fuel off loading rate betweeñ 300 .1400 litre min fuel storage tank site 2.7bmillitre host ...40 tone dieasel ..technical detail . 1.six 350 mw units .installed capacity 21000mw ..20001 capacity .1980 mg ..đesign efficįeñcy at ratèd turbine mcr ..%.35,60% . -ramp last : 34,48 per hour .availablè over proďuction ...3 yèars 9675Gwh.. Peaking power station .accord cohesive leard'ership change power to supplemental. Period mòrning domestic record industrial demànd total storàge pumpagèv station gàz turbine nominal.turbine total nominal capacity of 589444mġa On Mon, 01 Apr 2024, 14:02 tshingombe fiston, wrote: - explan : fact sheet co coal desaling fact sheet co coal power station C00002.electricty is producedvin coil firing building a coal fired c0003.c004 ash management cooling technique rev particulate emission control rev c00009 the of c000clean technologie environment technollgie environmental general intersted GS gaz Gx generation .Hy hydro :HY0001- pumped storage schem water transfer hydru palmie technical .hy0003 pumped storage ..dramnuclear aaRw renewable .TD transmission distribution environmental.. -explain visitor expanding mandate eskom by promotion generation grouo support eskom daily during week days the genersl public industry .. Subjèct to security ..25 km ...protection .installatiòn are underground 4 rèversible pump turbine situated..156 m level gènerater 10000MW ..4×250 MW ÈLECTRICIÞY On Mon, 01 Apr 2024, 13:47 tshingombe fiston, wrote: -explanation .to requesting information from eskom requests must relate eskom demed review the submitting a requested considered amount available please note information portal sponsor sponsorship donation finding recruitment. -Explain promotion of access to information. Act effect to constititional rigth access state raporr latest delegislation air compliance with act 20 of 200 . _media room publisher ..social ..eskom construction and activate alternative 132kv powervline for central kari 2024..power outage lasting . -explan electricity technologie solar power :photovoltaic solar modulev made up solar cell photo in serie cell are made purification silicon (si). - p-n junction that utilise energy residence .residence project underway valuate sucessfuk sabs wind power .principal invalide generation is very much as what during the centure diff2 introduction move of air blade .biomass agricul. -technologie. Electricity tips electricity safety infographic .fact sheet power serie books -explain about electricity tips .need compagny educate encourage participative among businesses sector use electricit is reduce usage is to switch off unecessart boim water number . - explain power faillure sometime eskom or municipality equipment fails the result is power failure . -known where to locate box in yor home only affected tripped switch it back circuit fault should offf fixed . - explain if you are ensure of wath do not elecfrician fix . -the problems caused by lightning storm a probe .powee lines your area or an accidental in the substation yoir power faillure problems main . -explain electricity technologie safety amounts plat .consucting important routine safety inspectes appliance repair replacement no doing result in accideb brakage can occure home ..electrical home can make inspectiin brakage wear deterioration sign of verheating missing parts screw covers switch faulty applancr control door smotgly adequately correctly labelling when loose fixfure . Pyschomtech pysychometrical ..technologie . - explain eskom power series: it important to test equipment regularly switch and off look possible problems. Faulty plugs and electric socket .in the dat and plug an essential parr I air level electricity important .. Plug safety tips are for use buying using plug ..look for sabs and use sabs approved ..don nkt overload plug sugn and only approved plug .dont not over load plug mother used an adaptor .switch the switch off ar the wall sicket before pullinf .do not connect electricL to ligth sicke.never put bare wirw into socket Explanation educare care education trchnologie .if the babie in the house ensure wall sicker are coverd safety keeping safety the area safe for babje play in cords like plug are essential parr our environmental cord also represent safety hazard such the tips thar follow should be used to minimise -do not used frayed cors replace worn and frayer cord on appliance immediately. Keel cord well away hot stovd athor do not run electrica cord under carpets .dont joint cord with tao.dont run cords through .din nkt run. - renrwable energy .water conduction electricity general is thus water in around . -do not use electrical appliance in the bathroom .never tiuch electrical appliances with hand .never fill a kettle when it plugged ib never grassloev..never hold an electric apliancr touch metsl such as top frodg or stove bodie 70%water. -electricty and children are natural interest in plugs childreb plat loosng housr .teach children not play electricL sockrt babie .. Outside home over load plug cause a fire multu adopt willl more safety..how to change a ligth bulb identify change .switch off the mains switch on the distribut2 board or electricity dispense switch off the ligth switch .lamps bulb changed remove failt type insert care switch main switch on db .wiring a plug .: central cutting the plastic insulator insertvtwister On Mon, 01 Apr 2024, 08:30 tshingombe fiston, wrote: - purpose : explain Eskom:transform input natural environments coal nuclear fuel diesel water and wind 90% istma system business continhr to legal . - explan fundation business generation transmission distrib2 and sale of electricity suppllemented with the construction new power station infras2 Gx , Tx ,Dx division finance humsn resource procure2 information technologie telecommunications strate2 risk and sustainbilty legal and compliance . - explain stake holddr relation in s suppoe3 legal and compliancd relation in support electricity busine2 eskom ..industrie subsidiary performe turbine .repairs and provides specialised construction. - explain inputs finance : R18,9 billion 56 billion governed. -infrastructures : 46466 Mw nominal power station capacity 399546 km power line and cable .. - environments : 104,87Mt coal burnt 270736 ner .. - paralle 44772 employe R.820 mil traine .. -nuclear generstor africa ..generate electricity form cool aptimal. -fossil fuel based generation .. Primary energy iddntity soutce delivery primary. - explain : system operator maintain the frequ3 of sysy5 at 50 hz to balance electricity supply and demand in real time .. Transmission provide a reliable efficient transmi3 network and energy market servicd in rsa - explain products 191852 Gwh elecity sales distributor industrial commer coal international . Distribution provide reliable energy and related seevice . -explain easte and products 30,84 MT ash produced 71,35 KT particulate.emission 206,8MT..Co2.. -explain generation capacity : 30 power station , total nominal capacity ____ -Base load stations Coal -fire station ---38773MW. Nuclear power 1860 Mw. ____ Mid merit and peaking station Pumped storage 2724 Mw. -hydro station 600 Mw -OCGTs 2409 Mw ____ Self dispatching energy .. Transmission.. -transmission 33158 kw -transforme capacitor 1545000MVA grids .. ____ Distribution Distribution lines 47809 km Recticulation line 310290 km Cables 8288km -- Customer 6,7 million Operating cluster 5 Zone 27 CNCS 308 Service hubs 101 Contact centre 8 ____ Explain .Strategic intent statements Intwnt statement.state entity implementation government polich and strategy the share holder intent statements (sis) outline government's short to meduim long term objective for eskom to achievd to achieve to ensure that eskom remain a ritical contribhtor to government goal of ensuring . -security of electricity supply to the country . Conduct reporting in line witg model with profil .. Submit annual strategic documents and report .. -Provide reliable affordable electricity .. Ensure and maintain financial . -consolidated socio economic contributions . PFMA : ..Minister public entreprise.. Boand of director : audit and risk oversing of internal internal invest3 and finance people and governance socisl ethic .. -executive management comite .capital information and technologi nuclear mana3 operation regulation risk sustain .. On Sun, 31 Mar 2024, 19:59 tshingombe fiston, wrote: Lms frameworks regulatory : explanation : Information management .compagny :explanation Eskom mandate from share holder .. Assis the businesses africa growth providing stability of electricity supply throug provide in efficient efficiency sustainability maner will achieve an electricity newtwork .generation.transmission and distribution whist ensuring that is .. Purposr statement .powe growth syst ..vision sustaina3 power better futhure . -delivery : missioj statement turn around existing business and resculable eskom oper2 financial sustainability create a sustainability eskom serice economie ... -Explanation stragic objectivs : purpose financiak operationel sustainability facilitator a competive future energy industry modernise our power ... Explanation eskom .organizations structure eskom holding cooporate functions .generation .transmission distribution eskom industrial roteck. Explanation. Leadership eskom board executive executives.committed chairperson acting chief finanxiaj .non executive .independence eskom conduct annual .effective. .. Explanation .investor integrated interime result .. Gover2 guarented government rsa recognise eskom critical role in the economy and remains ensuring eskom financanciaj stability oon 28 october 2011 gov annluced would extend its guarented .eskom R174.vn to total of r 359.. Explain eskom bonds financiak years funding reayi2 necessite insurance of deb in the domestic and internationaj deb capital ..compare . _explain sustainability developments sustainably developments overview assessment.EIA transmission.EIS generation. Archive d project eskom inyegrited sustainability developments issue into decission ..make long term .provids energy service integration economic development frameworks. -safety health environmental qualiry policy 32-727 -safety healtg environmental quality poster 32. Eskom RTs research direction repoet .. Dual 132kv switch station transmission masa ..substation 400kv line to 132 kv . - supplementary demande response programme load provide tha response noticd period of 30 minute to six hours to restor reserv replace capacitor maximum duration agreed witg the supplier . -Explanation commerciaj and residential demand response responsabilitie..pilote eskom is piloting nationak demand responsability programe successful pilote test among other the appropriate technologies evaluate.50mw. Explain csi .compagny information: Leadership susidiary about electricity sustainability.developments cooporation contact generation cool procurement process primairy energy eskom own and variouse coak nuclear .transmission syatem developments planing . Demande response define measured changev in electricity customer or load Explain .typical reduction activitie resucing electricity power poweredtoto production equipment .turning of air conditioning unit shutting ligths . Esko system is responsible forreliability and securitt rsa grid by monitoring operationel. -power stàtion security so with mutch neèd .flexibility and reliability and to maintaining adequate daily opeŕationel opeŕationel margin cater circumstance stability factor system conraits cauße weathe P On Sun, 31 Mar 2024, 19:16 tshingombe fiston, wrote: Purpose :orienation industrial ,organisation planingsupervision management supervision .. ..management system information data portal student . -data portal student eskom : Claim Id .rdkqdn2udun4uze. Claim passcode :×wb nxmkjh5izpqg Date of drop - off : 2024 -o3-08...10:31:05 -sender .name eskom automa2..organization eskom .. Email adress noreply portsl @ eskom .co.za . -files name eskom k87w.cvs descfiption 5y data reauested size .12.7mb - zend to trying drop off some file servic name : tshingombe engineering st peace college. Email:tshingombe fiston @ gmail.com Drop off same files for . Process ..https zsnd to eskom .co.za droo off.auth=9a2334e836a4f1b1afc6dec30d1fadc6 dec 30 d1fi50 copyright2023 ..21 days zev retrieview On Sun, 31 Mar 2024, 12:17 tshingombe fiston, wrote: Enquiry: re qualification.. . ID: saqa explanatiry return refund ID 201911130002; id 202211165055; 202207085055; ID 22071250145; ID202303115021; 2022-11-16.45 26 mars application . 26 mars . Enquiry 26 15 :06 SAQA (NQF)act 67 2008 mandates saaa to provide qualification evaluation and advisory services which it does in accordance with saqa nqf as amende march 2017 section a of thr policy criteria stupilate that foreigb award institution meet for qualification to be recognise. -leaver school dr congo ..statement leave statement n1,n2n3 . Leaver statement .. -final award graduation certificate .;completed transcript .mark sheet academic record ;translate -application does not meet requirements not . -Cvs currilum saqa Person mr tshingombe tshitadi id number :TIRCOG000910610. Race afric ..vacance 2023 /434 ict manage ..... □□□□□□□□□□□□□□□□□□□□□□□■■■■■■■■■■■■■■■■□□□□□□□ 18 april call institution is not registered under Dhet check college QCTO ..10167.. Officer lindiwe grace mahlangy Reoul i have copied ou QA unit ..mahlangu .lqcto..org.za .. (LMI) Dhet research ..survey B..sept 2023 methode evidence base methode .. -director system monitor labour market intelligences dhet ..khuvule m @dhet.gov.za ..response on career student meeting goal , skill planing : . On Sat, 30 Mar 2024, 21:26 tshingombe fiston, wrote: Statement of work instruction n diploma engineering studie .saqa qualification n diploma enginering stuie saqa learning programe Id : 67043 national n diploma nqf level 6 360 Scope work experience .: date sign .statement of work experience logbook .learner detail :sur. Employer detas compagny name adress :st peace college .engineering 84 president topics and career ./ career external candidat compagny city power ; compagny eskom , compagny . Compagny .sarb .dtic portal -learner name : .. _Supervisor name : lecture senior .trainer engineering . Work telephone : 011330171 -employer .perform manuel soldering desoldering for installation and fabrication installation . Date :02/03/2023 / sign tsh .. Undertaking material .reading and interperting routin information on written specification Topics industrial electronic explanation .experimental lab electronics workshop assessment critical welding drawing engineering welding metal outcome . Code w2 .iterpret technical draw looking evidence .confirm skill Checking drawing job requirements relate explanation .electrical trade theory electrotechnology find falut explanation make labelled circuit balb switch wiring way .and serie laralle curcuit ...labsl W- confirming drawing inccordancr operation ..where appropriat obataining current version . W. Reading inyerpreting informatiob thr drawing procedure ..checking clarifying task related informatiob ..where appropriate apply lubrifiysbr accordance where appropriate applying packing inspecting the finak assemvle where appropriate .. Topics engineering science ..and physic engineering practical strent matter solod liquid gaz ..chemical engineering topics ..linearisation fundamel mass ..mxacceleration kg .. - diagnosr and repairvequipment obtain following circuit specification schematics record supplie ..locating obtaining error code interpretation equipment status indicated assembly compnent connection by buily conecting ..removing replace repair ..recording result of test undertaken on electronicd isolating adjust calibratiin returning service isolation assembly from the power suply recommissioning electronics .maint control instrum... -Topics . Electronics industrisl trade theory electric mait care electrotechnology part ac dc machine topics construction machine component relate constitution step .. engineering drawing vue top side cut sectionel .. □□□ -work experimental viste web site portal eskom Data portal information topic student drop off : Cvs tendered close -expo science eskom particpe experimental information web facebook on line vacance .job sacpss career .cvs . -City power on line information data visited experimental career on line facebook strike ..77 point .. linked cv indeed city power email Tendered ..experimental dabase vacance job .complain board city power supplies. Municipaliry metering Meeting zoom experimental.video ..databse . Eaton electrical : cv portal tendered assessment test experimental Data portal ups engineering electrical ..schenalder electrical experimental data compagny electrical test ..completed record transcript years fiscality .experimental theoretical .. Test job comparative memo explanation to workplace test compare meeting answer in job . On Sat, 30 Mar 2024, 17:17 tshingombe fiston, wrote: - Enquiry : qualiry council for trade occupation qcto .engineering n studie Skills programme evaluatiin checklist template in line with qqsf . Policy 2021 qualification . -requirements :qualification Qualification parts skills programme : ebgineering electrical n studie trade . -type nomenclature : -title description : engineering electrical n studie engineering .national trade examination .and n diploma saqa transcript engineering developments Trade panel wiring chieta . -nqf level 5,6,7 --____ Section b :qualification development quality team detail -Name surname :tshingombe tshitadi -Details of qualiry .partener -name surname and contact of QP Official assigned to :grace . -name and contact details of subject matter expert assigned to facilitate quality : grace -name of Qcto project manager assigne : - section record of feedback evaluation and moderation process and details of evaluators and moderators assigned to improved quality - item : date receive Qp from sme post development: - response .:y -item: date returned to sme by . _returnef. -date received by qcto central office /qcto project manage .. Date of feed back by central project . - sme self evaluation date : 10/11/2023 date feedback : 03/03 - QP.:evaluation date : 10/11/: total number Qp model names (s) moderation .- QP peer moderation : 10/1+/2023 Qcto : evaluation date :10/11/2023 :total number of qcto - Qcto peer moderation : -name of qcto commited for approval _date of feeback the outcome -section d quality of appearance qualification part qualification skill:. programme document Comment engineering: -section D qualification appearence qualification part skill programme document . Criteria : sme Qp qcto response _D11.q sectiin a,b,c is completed ;yes;yes;yes;yes D.112 current qcto template . D.1.13 document is editing .yes D.1.14 document .. _1.2.1.qualification part qualification skilk programme detail document sarisfies policy requirements in each of the follo . - occupational sub frameworks type nomenclarure . - skills programme subfield .qcto curculum codd replacement qualification. -rationel documentation satisfy policy requirements: _1.2.3 purpose : the document satisfie policy requirements. Yes - 1.2.4 entry requirements: the documentation specifie all relevant yes practical possibilitie. - for entry into the qualify : recognition rpl document standard .for awarding satisfaction .:yes . - rules of combina2 :document contain .policy requirements. 1.2.7 soft skill included: the document :yes 1.2.8fundationel learning satisfy policy : yes . Associated assessment criteria: 12.integrated assessments: the documentation contain Qcto sta2 provide in the :yes 2.2.2 curriculum information:yes Document contain ciriculum informatioj 2.2.3 curriculum structure . 2.2.4 entry requirement satisfie requement document standard yes . 2.2.6 qualifity partner for assessment is indicates in table all detail . . List qualify skill program relate circulum . -section 2.occupation/specialisation . Part qualification skills . Programm profile 2.2.8 purpose . Include . 2.2.9 task linked to task Document task 2.2.10 occupatione task details Section 3 curriculum component specification : 2.2.11Knowledge module specification : 2.2.12 practical skill module 2.2.13 work experience module . 2.2.14 possible sewuencing and integrariin Section 4 statements of work experience: doc satisfie. Role :1subject matter expert sme ..,2 quality partner representative .3 Qcto project manager .4 qcto qualification Qcto.:qualification document report template . 1. Qcto approved application Qualification developments based . 2.qualification document for follow 4.skill programe document for following skills programme. 5.details of subject matter expert who will facilitator the developmentof qualification □□□□□□□□□□□□□□□□□□□□□□□□□□□■■■■■■■■■■■■■■■■■■■■■ -QCTO : SCOPING REPOT TEMPLATE : 10:working days after scoping meering : .qcto : approved application details -1.Occupation :engineering electrical -OF code N 671102 . -specialisation : engineering. 2.scoping meeting details : Date :2/01/2024 ; venue ; time 3. Preliminary details of qualification indended for development. 4. Preliminair detail of part qualificarion intended for - qualification engineeringelectrical /360 5.prelimairy detaul skills programe intendeo for development: 6.analysis of stakeholder consulted for the scoping Classification: workplace practition ,professionel body ,regulatory,employee association . -number of participant where :4,4,4, -number of participant attended 4,4,4,4 -Qcto .working groyp nomination form qualification development reviewers . □□□□□□□□□□□□□□□□□□□□□□□□ -1.1 nommination for the apointment as working member .. Nomination detail -full names :tshingombe . -institution:st peace college /saqa institut forening . -business adress : markad streer . -telephone:no 072529846 Cell no : 072529845 Email:tshingombe fiston@gmail.com 1.2 nomination for the appointmentas working member - subject matter expert from the following : staholder grouo ; yes assessmebt expert yes : practitioner industrie ;yes; employment irganisation yes ; regulatory bodie yes ; professional body yes training .council high education . Accepting nommination participate as working groupev qualification development review . Declaration by accepted nomminee i hereby ceetify compagny ...checklist confirm motivatev yes ..certifie valid service experimental. -attandance register .date No/name surname tshingombe /organisation st peace college /tel number / email .signature tshingombe □□□□□□□□□□□□□□□□□□□□□□□□□■■□□ Expert group nommination :linked -1.Enquiry and requirement pratical work experiences: portal Engineering council sa :registerinf cvs portal self service :CRM 0041308 Profile number is ECSA:_00125662 Candidat en○■■■■■■■■■■■■■■■♤3 -2.enquiry portal DTIC : industrie and competition .. Invoice : compagny :tshingombe engineering Invoicd number /status/submitted/order/action R0169241870.. Supplied.. -2.1technology and humain resource industrie programme (thirp mileston auditb.. 2.3Project information as per agreement between dtic applicant ..name tshingombeb project reference :number 1111. -project description : implatation framework st peace college engineering electrical .gov system assessment policr trade in job city power ..eskom . Sector .jhb.project . Project stie : jhb Projet owner leader .bee status .levek 4. Date of audit :12/12/2023 Original aproved. Share holder compagny group compagny structure member /incorporate share hold .racr gender disability . Section B project humain resource research students and graduate involvement information . Researchers involved in th project please provide breadow of researchers :applied research activtu .use student incentivr .research invole contractual deviation .progress on approved expend .reason.. □□□■■■□□□□□□□■■□□■■■□ 3.cds central supplie .tendered profil tshingombe tshitadi Portal : RO 169241870 treassure . Bid -4.R&d. tax incentive :tshingombe outcome -tshingombe:application for research and development for research and deve2 the income tax act 1962 act no 52 of 1962.. Registration n: 2013/034490/07 please compagnie project linking ..annual progress report . Tshingombe status compagny date creation .30 /11/2023.. 1.department science .research and developments tax ..purpose technologie programme ammend 11 income tax act 1962 act n 58 of 1962 ..name compagny tax ref tax years .project technology programme.objective method researc fund .. □□□ 5.CIPIC: portal training director ..engineering electrical st peace college career cvs property cvs report 30% Grade clcul weigthg range feedback contributing .module1.2.3.4.5.6.7.8 □□□□□■□□□□□□□□□□□□□□□□□ Seta lms admnistrator edit portal Used id :127952 User name :TIRGOG0009106 Create date 2023 -10-24 ..merseta sasseta portal : Psira portal : .. Sector training authority .security safety training authority .private security authority .assessor moderator Ceta .chieta Saps ..metropolitain career □□□□□□□□□□□□□□□□□□□□□□□□□ Sars portal . Profile candidat cvs assessments psychometrical :casev Requeste material e filing . Registration.auditing . Revenue south africa Case no 419081397 Issue date 22 /03/2022.. Case no 474178762 Issue 18/10/2023 Dear tax payer issue □□■■■ Sarb: poral carier Info id : 61095446.. Syma 2023_06_24 .. graduate career Job application ..artisan electronic ct , manager banking supervisor .robotic process automation ....engineering Bank note process machine ..data science career Project career data science □□□□□□□□□□□□□□□□□□□□□□□□ work permit studie permit license visa home affairs : job career tircog000910610.. Affairs career □□□□□□□□□□□□□□□□□□□□□■□□□□ Labour court ,ccma jr 2461 /15..gabg . .skill development..tax master court high court ..power attorney □□□■■■■■□□□□□□□□□■■■■□ Dhet National skill fund project : National career kheta advisor. Profile National reseach fund : □□□■□□□□□□□□□□□□□□□■□□□□□□ Microsoft : exam registration schedule MCID:995847175 t.t On Sat, 30 Mar 2024, 14:20 tshingombe fiston, wrote: -Purpose: constant acceleration, conservation ting unit mechanics ; dampes harmonic ascillator , damped harmonic oscillator , direct impact and newtob low of restitution,elastic energy strigs and springs ; force as vector ;newtons low of gravitation ; newton second low ; newton third low ;powwe priblem involving relative velocity ;projectiles .pulley; relative motion resolving force rigid bodies in equilibruing tension in string .the trajectory of a projectil; varisble oscillation ; work done by a constan ; probability .. -applje test stability and dynamic stabilirt .use math - explanation stabilty theory and principles.tools requirws to analyse and predict the behaviour of various objects system under different . - theoretical framework of stability: the framework of stability consist of several underlying approaches to evaluate an object or syatem stability under specif specid circumstance - equilibria stationary print or a system where all force and dynsmic are balance equilibria can be classified as stable .unstable depend to equlibruim or moves away subject pertubation . - explanation linear and non linear system . or neutrral system complex require linearization or other tobassess stability . - disturbance and pertubation influancr that move a system away from equilbruim the reaction to a disturbance help determine stabilitt lyapun method .. _explanation stability theoretical frameworks can vary across discipline control theory and dynamical system study material . - constructing stsbility model : indentify the system kr object in question cant variable transfere differences. Determine equilibruim points or state where system dynamic are balanced. -perform linear stability analyse around equilibrium n la place linearization for non linear system under various condition. .-explain mobklity anf stability ability to maitain posturaj. - poatulate of relativjty state low momentum . -Statements of newtom second low motion change in moment varistion is given by deltt p = deltat (m×v). -"ifbmass of the system constant then so that for constant [delta (m×v)=m×deltat .V] Delta .p ..m×delta v .. fnet = m×a ..calxul force recorrr stragy involves only delts =delta =m×Delta ×V =m×(vf-vi)..velocity impact change in time ..F×change p .. Solution .. - explanation linear moment and collission .introductiin to lineare momentum and collision , lineare momentum and force impulse conservation momentum. Elastic collision in one dimension , inelastic collission in one dimension collision of point masses in two .. □□□□□□□□□□□□□□□□□□□□■■■■■■■■□□□□□□□□□□□□□□□□□□□□□■ - career accessible licensinf university college physic . linear moment . ____ Moving object grater mass ..P=m×v .. Momentum is directly to the object mass and velocity grater mass also momentum .. -stabilty magnetostriction transformer vibration analyse . -Explain magnetostriction is phenomen core in normal operation mode create model evaluating deformation magnetic vibration manetic intensitive vibration order magnetostruction . _case study of magnetostruction legger 200 MVA powwr transforme witg the rated voltage of 13,8/137KV is conducted based on which comparetive analysis of vibration level and elasticity ....displacement . 20mms ..10m/s .s acceleration -ferromanetic material .power transform ..function ..L=f(B) elasticity deformation winding. Case study .5 legger power transformer with primary 13.8 Kv .. secondairy rated power 137 kv rated power 200 MVA vibration result value 20mm/s ..2,2times ..6 instantaneouse .. □□□□□□□□□□□■□□□□□□□□□□□□□□□□■■□□□ .. On Fri, 29 Mar 2024, 20:50 tshingombe fiston, wrote: Purpose ..university college . Faculty engineering university college enginering college business .research topics Workbase university workshop workplace topic university institution college .physic college engineering .college .fundamental engineering.process engineering control fabric .. Research assessment critical and learning lecture critical workplace base framework: construction engineering veotechnical ..subject engineeringscience bjilding engineering electricalm geotechnjcal mining new approach ..stabilty analyse embarment present result anLyse base interpre .prosoe empiric geotech reseaech councik ..shear strenth result normalized with respect consolidation stress normalized desigb stabilty analyse .. -Explanation examiner variation function five ratios of strengtg .. _topics stability of embakment constructed kf soil treat soil cement colum geotechnology objectivy investigate the effectivness of soil cement sc settlment factor of safety at variouse time interval consolidate construction electrical. Embarkment construction sequence . -lafinite element discretation quadrllateral and trisngular element with degree variation of ecess transportation infrascture. Variatiob post construction -explanation topics static coursmm physic static analyse objext and structure with respect motion deformation and faillure in additional learning. Explanation introduction to static overview of statics introduction units and problem solving .. - force and other vector :position vector equilibruim of particle inyroductiob to equilibrium .moment and static equivalence . The rotationel tendency of force simplificatiib moment interconnectiih of gravity and importe geometric properties. -centroid and centre of gravity importe ..internal force rigid bodie .. Frictiin equilibrium of bodies subject ..moment of inertis an important property of geometric shapes used in many application. Explain : static move to solid sheae and moment frames ffundamentak of static friction and machine . -explain static knowledge in solide includ stress ans materisl properr ans torsiob . Explain static knowledge in dynamic the concept . Sum of the force sum force =sum mass ×acc is equal sum mass .. - explaib newton low motion .stability analyse system disturbutence ..accuracy theory comprehnensiib theoreticak framework of stabilitu re Reliability.. - explanation stability math mechanic Acceleration and time ; angular speed ;assimption : kimematic ,coefficien friction ,connected partickes .conservation of mechanical energy ; constant acceleratiin .constsnt acceleration equation .; conv On Fri, 29 Mar 2024, 16:29 tshingombe fiston, wrote: Explanations: y axes points Q2,(0,004;,0,03;0,02;0,01)..Q1.x axes.(0,01;0 02..) F=Q1.E1..... Q1=+10exp 6 ; Q2=+10 exp -6 and Q2 location charge Q1=+10 exp -6 , Q2=10exp -6 and [x,y,z] [0,03;0,9],[0,0,004,0],and[0,02;0;0] metre force and Q1 os rappelled by Q2 ans attacted by Q3 it clear that two force act a lonf difference direction the electric field ppsir2 of Q1 due to charge .. -Eq,×=2,16×10x.6a -2,88×10 exp y^ .newtos per coulomb.. E1, 3 =3,6×10 EXP 6 .X E1,2+E1,2...(totak)=1,44×10 exp 6 ^ -2,88 ×10 .6 cartersien x and y F1(total)=1,44x^-2,88y^ result ..E= - grad .v ... E=vb-vz÷d; Q÷A.. Vb-va=Qd÷€.oA=Q÷€..capac2 parallels plate cPacitoe equal to €o A/d faraday equivalent energy On Thu, 28 Mar 2024, 22:12 tshingombe fiston, wrote: -state explain displacement node point wave particle ..double antinode excited quartz chancd photo acoustic spectrophone differing the fundamental flexure movs . - explanation ;antinodes oscillating in counter phase excite resonance antinode points simultaneously two laser beam if their phase shift. -make labell spectrophone schema DAE ..and explain ..beam dector split monor ..□□□ beam □□□□□□□□□□□□□□□□□□□detec□□□□□□□□□□□□□□■□□□□□□□□□□□■■□□□□□□□□□□□■■□□□□□miror□□□□□ - explain laser emmitting 1,37 um H2o absorptionbline located at 7306,75 cm with a line .intensity of 1.8 ×10 exp -20 cm /mol phasw compensation adjust the phase beteen two laser beam passing m rs in order . - explain what are require the accoustic resonance an occure explain .. Their spacing is equal is equal to an number of half wave lengths in thes condution antinode maximum of the surface with one ..labal node ..N=node . - wath mean expression formulae |>>>k>>>□m□>>>>>○m [K+K)-w.wM]x-ky=fo(w-kxt+[k-w.wM].y=0 -w1=; wo=sw; w2=wo+sw...2w÷wo=..wo=square root K÷M [Alpha 2]exp T ..[square roor beeta.q].[zlpha] ...xp(wo)÷x(wo)=1÷2((1÷sw÷wo)_1(sw÷wo-i) -explain oscillation simple make labelled harmonics formulae pendul period .. [S] ; T=2pi ..sq root L÷g □□□□□□□□□□□■■■■□□□□□□□□□ □□□□■■■■■■■■■■■■□□□□□□□ Mass spring period ..[s]T = 2pi .sq root m÷k ..kg ÷kg/s.s □□□□□□>>>>>□□□ X=-A.... -low period frequency ampli2 displacement and phase differences displacement amplitude period (T) frequence. - Design : displacement of oscillating object specific time equilibrium -maximum : displacement of the oscillations object . -time take for -number of time second f=1÷T. - energy tramsfer wave ..condition simple harmonic when body is from equilibrium there musr exist a restaring force that want to pull the bodu back to equilib3. - the magnitude of the restoring forcd must be proportional to the displacement of body .. - a travelling wave .is a continuouse disturbance in meduim caractere a rope thar flicked uo and down cintinously create a repeating distrurbance similar to shape of a sine .. - calcule wave lengtg frequency periode abd wave speed propertie speed source 50Hz wave lengtg 600m , y = 50×600=3000m/s.. Make label wave caracteris3.wave front a ligth ray ..plane wave - explain amplitude intensity wave depend it depend on it energy wave is proportional to square of it amplitude 100.. Explain constructive deconstruction wave constructive interferencd superposition where twi add 1+1=×rigtg deconstruction superposition . - polarizTion ligtg is a transverse wave polarzation only occur to transvers wave of lenth ref to orientations. - calculate refraction solution. tan(¤)=n2÷n2=60÷39=2..labelled refractoral polarise rare meduim denser meduim refraction. -calculate polarize ligtg filtered in labelled .. I=Io×cos.cos $= ..4 cos .cos 60= - explain wave reflection and refraction plan labelle angle incide ..angle of reflection incoming rf .. - explain low snell a formulae ..n1÷n2=sin ¤2÷sib1....normal angle of incidencd ..angle of refraction .refractii ray .. change direction wave transmit . □□□□□□■□□□□□□□□■■□□□□□□□□□□ -explain define electrostatics ..electrostatic is the theory of the electric field in condition which it behavior . - explain particle for mulae charge ..F=R..Fo×q1.q2÷R.R.. C.C÷F/m.m=C.C/F.m=C.C/C/V..=C.V/m=j/m..newtow F=q2.E1 electric field intensity Eq.ossociated F=q1.×q2/4×1. 14×€×R ○○---->○------>>F □□□□□□□□□□□□□■■■■□□□□□ - explain combining result : E1=R^.q1/4×1,14×€×R×R...vector begining the particle ..€=€o..r=1 ..E(r)=r^(1,44kv/m) Large engineerinf electron is nkt readly apparente istancr eayal positive charge field to point charge E(r)=r^.q1/41,14.. -explain distribution of charge ..qn = pi (rn) .A..Er ()= 1/4×1,14€×sum n=1×r-nr÷r-rn)×pL(r×n).delt.L □□ .. Calcul electric field a long r'=^p. ..r'=p.a .. |r_r'|= sqr a.a×z.z polar field - explain low gauses : field associate ..integral 1.14 to teta ..integral 2 ×1,14 to teta ..D (r.r×sin teta ×d.teta.d.phy.. Using implet symetry argyment D.can depend r the charge particle .. r.rD(r).integrall .1,14 to teta = O ..integral 2×1.14 d = sin d.dteta.dteta.=a vector ..D=r^..q÷4×1,14×r×r.. □□ - explain force the force experience by a particle at location bearing charged q.in electric field intensity E ..is Fe=q.E(r)..f f space potential energy energy the loss quantifie using delta .w =delta L. different. Explain energy delta w..qE(r).idelta l.give work only short distancr .. W.sum .n ..to n=1.Delta w..w..q sum N.n=2... W=q.integral E.(r).^i(r).dl... W=q integral..E.dl...dl=idl.. Work done by transversing variation delta =w÷q, =- .integral .E×dl □□□□□□□□□□□□□□□□□□□□□□□□□□■■□□□□□□□□□□□□□□□□□□□□□□□ - explain integral = .E×dl..curve at point and at point 2 be indentifie vector rq, r2 .. V.2.2=integral r2 to r1..E× dl W.2.1..=q.×V2.l Explain kirchof : W2.1=w2-wq....V2.1=integrall - explain low poisson and la place equation electrical potential field (v(r)computer ..V2.l=V.(r2)-(r1)..and abilty fiels gradie5 ..integration.. V^×E=V÷e... □□□□□□□□□□□□□□□□■□□□□□□□□□■□□□□□□□□□□□□□□■■■■■□□□□□ Operation posson cartesian matrice V'.v=[derive partial d÷dz.x^×d÷dy.y^+d÷dz.z] Explain flux density Dn ..integral countour .d×ds=integral tot D.ds .i +integral side.ds+integral button .. Explain coaxial : rot =a and rot =b..cylinder .. - explain capacitor determine capacitor ..C=Q÷V .. is the charge on the positivelt charge conductor v is potential rot .l=Q÷ V=-integral a to e = (p.^.rot.l÷2×1 14×€×sp)x(^rot dp) .. CA=Q÷V=ROT×L×L÷(ROTL/2×1,14)ln(b/a).. C'=2×1,14€×s÷ln(b÷a) Capacitance of RG-59;a=0,292m □□□ - explanation low faraday low of electromagnetic the E.m.f produced around a loop of conductor is proportional to the rate of change of the magnetic flux alpha the area A of the loop thos loop this €=-N.variation flux ÷vation time ..flux =B×A..is streng ..solve the problem .e..... N.bf.Acos(TETA)-B/ACOS(TETA)÷VARIATION TIME ... =4×(1,14(0,03)×(0,03)×cos(35)×(3,4-0 ,4)=1,03×10 exp -3V... Equivalent enrgy ..w=1/2.×€o.×E.×E Ad..quantie area plate time .. Torque ..T=B×E×sin tets.. Dipole moment in the direction of E potential energy alogn the dipole .moment p in the direction of the po Tiel energy Ue=-p.E.cos teta in vector notation u e = -p.E.. Explanation state faradat low motion €=B×l×v.. If conductor does not move at rigth angle 90° to the magnetic field then. Angle tets added low lenz .....€=-B×.l.×v.×sin teta -explain magnetic flux faraday low electromagnetic ..flux = B×A×cos field the magnetics flux ..tets angle between the magnetic field ..A the area of loop .B the magnet On Thu, 28 Mar 2024, 16:17 tshingombe fiston, wrote: -1.Enquiry : qcto certificate accreditation ______________________________________ -and assessments ocupation trade , n studies engineering electrical in trade trade test accrediation engineering electrical occupations ,scope nommination re -check rerwiten Qualification n diploma trade n1,n2n3,n4,n5,n6,n studie -nated dhet: id Panel control and wiring electrical level 1,2,3,engineering electrical infrastructure pratical Id number: merseta ,chieta seta sasseta ceta -1.1.Requirement:qualification qcto tools assessment and evaluation accreditaion trade and re accreditation trade test and scope n diploma engineering electrical --- certificate and assessments occupation . 1.1 requirements:qualification trade n diploma award certificate 1th ,2th,3th,4th saqa qualification dr congo Originator :Leaver assessment .diplome d 'etat technical industriel electrical , - pedagogie technique ; doplome attestation frequentation; prepo graduat electromechanic, electrotechnic ,electronic industrial - inpp : service motorise -unikin faculty science department math information Technical industrial - and certificate award 1th,2th,3th,4th Qualification china Id : ________________________________ Originator :St peace college africa institut police faculty engineering .saqa institu foreingn :frameworksqualification nqf policy cat ..research nlrd dhet institution : policy dhet dbe policy examinationpaper sylabus .qcto from sabs .. Originator :Scotiss ; -sqa uk level 5,6 assessment evaluations reasoning ,india qualification level 5 practical institut ; -usa qualification engineering std nema standard defense scope trade theory pratical lev ; - canada trade occupation pratical license the trade license pratical trade test criterion occupation assessment ;australia trade career -French qualification : professionel.art metier ; technical engineering: bac laureat .en -Belguim qualification : professionel art metier polytech cbec eic lausane -dr congo qualification :esu epsp ______________________________________ Purpose : applier science engineering, physic e assessments -explanation criterion refraction V1 and V2 speed respective meduim lambda 1,lambda 2,wave length changing calculate : Outcome :evidence low sin¤1÷sin¤2=n2÷n1=lamb1÷lamb2=V1÷V2: refraction V1 and V2 speed respective meduim lamb 1,lamba 2,wave length .reflectiin internal lambda =200÷50=4, Sin¤=1÷50. -explanation:thermodynamics compressor fundamental isothermal process :is the temperatures is kept constant unchanged at the pressure increase during compression cooler process polytropic. -explanation .compression process constant the work input the compress3 procedd foot found pound mass in genersl head . Outcome : isotermal H isot = RT1LnR, R=100÷200×10 Ln100÷200. - explanation compressible fluid adiab..integratic isothermal process explain state or true..equation PV= constat ; pv constat specifie volume .. P÷eLogP base e+(V×V)÷2g+Z= constant Low.. -Explain fugacity : is the change temperature consider isothermal solid liqyid or gaz .pressure and fugacity is converter gaz at very pressure isentropic Integral uto u du =R×T integral .Inf to Inf . Explanation math second order transition phase .P..V÷Vo.. -Define: specific heat at conststant similar that constant volume . -defined : as the rate of change of specificenthalpy at costsnt pressure with temperatures..cp =(dh÷d)T×p...14÷7=2..$Q÷dt ×p The volume of cp obtained continues .. -Statements constant temperature process constant temperature process are reffer isothermal true. -explanation boiling and condensing process occure at constant tempera2 and are accompagny by a change phase the work fluide .. Slow explansiin and compression process in equilibrium withconstant . -isothermal procesd requirements heat or work transfer to or form the surrounding they are not adiabatic .. -constsnt internal energy procesd du=0 - heat and transfer are equal and apposite so that SQ-Sw=0 - calxulating thermodynamic fundamental molar .idea gas obey ..PV=R.T,PV=const boyles low isothermal expensionvolume . W=integral .pdv] v1to v1,, RT ..v2÷v1 .- statement are trur ..An atom is the smallest unit of ordinary matter that form a chemical element -explanation an illustration of the helium atom depicting nucleus pin and the electron cloud distribution black the nucleus upper rigth.. _heluim is reality spherofical symmetric closed resemble the electron cloud alth for more complicated nucleuse not .. -the classification smallest recognized division of each chemical element .. -the properties : mass range 1,67×10 exp -27 to 4,52×10×1 exp _25 electric chargr zero neutral or ion charge diameter range 62 pm (He) to 520 in data page . - component electron and compact nucleus of protons and neutrons.. Statements sound and isothetmal . - Velocity of sound process equation velocity of sound iso thermal process .. Pv=m.R.T.....P=m.R.T÷T= 10×30×20×÷60=10.. -velocity of sound wave a fluid anf we above C=dp÷de. Sq root .velocity isothermal procesd ...c=...velocity isothermal pro9cess -state explain displacement nodr paint wave particle .. Double antinode excited quartz ehance photo accoustic spectrophonr diffdring th On Wed, 27 Mar 2024, 18:07 tshingombe fiston, wrote: Purposes: -Vab=Vbc=Vca=VL, Ib=Ic=Ia. Za=Zb=Zc=Zp=Zangle q. -wa=Vab×Ia[cos(30'+q)] Wc=Vab×Ic.[30°-q] Wa+wc=Va.Ia[cos(30+q)]+VcbIx[cos(30°-q)] - wa+wc=VL×.IL×(cos30°×cosq-sin3030.sinq)+(cos30°)×cosq+sin30°.sin P3$='O'×3×V×I×(cosq)=°0°×3×V×I(sinq)=°O°×3×V×I×sinx S3$=°o°×3×V×I..=P3. Real power P3$=°O°×3×V×I×(Cosq)=°O°×3×V×Ixfp .Q3=O×3×V×I=×[P.3×$+Q××$] -start delta loop a,c,d. ZS+Zb=(zab)×(Zca+zbc)÷(zab)+(zca+zca+zbc) -Za+zcc=(zca)×(zab+zbc)÷(zsc)+(zab+zca) -Zb=Zab×zbc÷zab+zbc+za Zab=zab+Zbc+zc×za+zc. Zb=Zab×zbc÷÷zab+zbc+zca Zab=zab+zbzc+zcza÷zc.. Zbc=zazb+zb.zc+zc.za÷za.. □□□□□□□□□□□□□□□□◇^- ____________________________________ Standard cabling interconcte point charge inductive resisitive 1+2j betwen I1 -Neutral ..2-1j betwen capacitive resistive I2 -I3..; 3 L1.L3, 2-1j L31 I1..3+3j..1+2j,3+3j I1.I4 inductive .. ¤¤¤¤¤¤¤[]□ ______________________________________ Star balanced connection parallele Generator; connection start synchrone G1 Generator;connection delta synchrone line to line 30Kw@0,8 phasing back ;15kw 0,8 r 797 volt back phasor -start a(64+16j),,(0,80+10j ohm ______________________________________ 1,4+1,6j ohm / 0,80+1,0j G1 start g2 deltat ..30kw@0,8 baxk ..15kw line to line..if back = G2=(1500+1250).V2=546,3 V1=721.G1..(-30732-52352j) Befor g2=(-15000-11250j), v2 = 6559.. G2=(-24452-22675j) ______________________________________ Zb=Zb=Zc=Za@° ..Ia+Ib+Ic.. Va=v@o Vb=V@-120° Vc=V@-240 Va=Vab=V@30°, Vb=Vbc=V@-90° Bc=Vca=v@-210.. VAn=V/°O°3@O° VBn=v/°O°3@-120° Van=V/°3@-240° Connection delta va,vc,vb generation and z1 start charge diagram fresnel ______________________________________ VAB=Va_vb VBC=Vb-Vc VCA=Vc-Va. Connection va.vb.vc deltata to line z.z.z delta ..va = vab = v@ 30° Vb=vbc=v@-90° Vc=vc=v@-210° IAB=VAB÷Zab=1@(30°-a) IBc=VBC÷ZAB=1@(90°-a) ICA=VCA÷ZCa=100(= Ia=°O°3@-3@-30°IAB Ib=°O°3 ______________________________________ Vab+Zs.Ib=vab+zs.Ia Vbc+zs.ic=vbc+zsib Vca+zsla=vca+za Kapp.. Increase decrease voltage.. V2..v20-v2=Rs.I2.cos$+xsl2.sin $.. ______________________________________ VZ1=VZ2=Vz3 simple valve ,II,I=Z,I=V÷z VL=VPH÷1,73 IA=VI÷Z=(vph÷Z=(vph÷1,73)÷Z IA=vph÷Z××1,73=vph ×1,73÷3×z I.start =vI÷z=vph÷1,73/z=I start = vph÷z×1,73=vph×1,73÷3×z. Power start = vph×i start ×1,73×cos @.. Power start=v.ph v.ph .×1,73×cos÷z×1,73 Pstar=vph×vph@cos$÷z -delta conection z1,z2,z3,.L1,L2,L3. J current reception. IL=IA;j=÷Z.j=I÷1,73.. J=vph÷z; j=IA÷1 ,73 Vph÷Z=1A÷1,73,, IAZ=vph×1, 73 IA=vph×1,73÷z Vph÷z=Ua÷1,73 Iaz=vph×1,73÷z Power delta =vph×Ia×1,73×cos$ P= v×(v×1,73÷z)×1,73×cos P=3×vph×vph×cos÷z Installation substation 70% max 70% .. Worplace manufacture .ligthing .kw ;turninf non 10 hp comlressor ,pump incendie .15hp after examiner customer ligthning turning 5 min pump ..factor factor interval of demNd x diversitt excecutuin 15 minute ×1,0.loading ligthning 5 kw ,factor of output demNd of .diversitt time of execution of 15 minute ×o,××+500watt×o,1=2,25 .5 min,current =15×1500w×o,1=2,25kw 5 min ×1,10=0,30 -load turn machinery =10cv×736×33=2,46 Compressor =20cv×7,36×5=7,46kw Load charge demand =15cv×7,36×0,0=00kw Purose:Qualification lab workshop practical Engineering electricL power system : Electrical workshop tools on precaution workshop pratical in discipline design equipment. -Task la is concerne to design domestic explanation low: Plug bulb fan motor -assignment domestic load calculation . Appliance unity power rating daily usage energy consumprion :fridge 100 400watt 16hour 400×16=6400wh;tv 27 unit 75 watt 12 h 75 x12 =900w;fan 36 unity 50 w 24 h 50 x24 =1200w;tube ligth 12.6 unity 35 watt full 12 h 35 ×12 =4200w;(:energy stove 9 unit ; 25 2h 2000÷2=4000w ;(Motor pump 420 unit 2000wath 2.. Oven 480 unit ×3000w .2h ..3000×5=15000..) energy watt unit 30 month 1000kwh ..《¤¤¤¤□□□□□□□□□■■□□□□□□□□□□■■■□□□□□□□□□□■■■■●●●●●●○○○○●●●●● -list of experiment topicd lab safety .electrical wiring; domestic load calculation and solar system design ;introduction to sketch .introduct 3 print .introduct to cnc machine process .pcb milling process introduction to solder2 processfinal.. - the chance or probaility experience hazard descript schoox physicologie can respira poor wiring -Lab electrical wiring standard size of wiring 18Awto 1Aw..; Gauge service entrance 3 /0,200Amp..1/0,,1/4 15 Amp - sold bar copper wire: AwG 10to40;nominal diameter 2,6to 0,079 /0,005 ●●●○○○○□○○○○ □□□□□□□□□■■■■■■■■■■■□□□□□□■■■■■□□□□□□□□□□□□□□□□□□□□□¤¤¤¤¤¤《《《 -assessments:wath gauge of wire used for 3/24(10AwG) Power dissipation power= p=V×I ..p=235×10=2350w. Provide brief conparison copper conductivity Safety a workplace measurent instrument. : fundamental safety safe usage of lab equipment. Tools : tester , voltmeter ammeter multimeter oscilloscoo signal generation dc power supply.. -Linear circuit lab □□□□□□□□□□□□□□□□□□□□□□■■■■■■♤■■■■■■■■■■■■■■■■■■■■■■■■■■■■■♤□□□□□□□□□□□□□ : Dc power supplies ;function generator .digital and analogi voltage and ammeter prototyping -channels number of input signal acillocop :vertical ,horizontal base ,trigger of the oscilloscopes trigger level to stabilise .. Assessments select device switable ..description ..device ..measure of time interval oscilloscop determine live neutral current consumer .measure of cPacitance wire .. Used dc variable power to obtain 5 vdc obtain the output wave form on oscilloscope chanei ..use function generation to obtain 5 khz sin wave signal amplitude ..plat out vac of your oscullator calcuk measure - rated 10 uf to 220 uf ; empirical 10.89 uf ..absolue 110-10,88 uf to 220-2299uf=99uf ..relative error FA-FM.VI/Fx×100%=8,9% 2200-2299÷2200×100%=4,5 Color code co-0-r-g code value 3,3kohm to 75 to 2000ohm to 820..empirical vLue 3,31 kto 76t929,230ti ..absolute error 117-76=1,1=200_2000=230..820-824=4ohm..relative..1 ohm1÷ 1×100% -20,00-20239÷2000×10=1,15% 820-829÷820×100%=0,48 On Tue, 26 Mar 2024, 20:50 tshingombe fiston, wrote: Fundamental input output -y=t.t+1; y..p(x)=2X; Q(x)=2x.x.x Dx/dx=dy/dx+v.du/dx. Dy/dx+2x.y=2x.x.x Du/dx+2x.u=o Vs=pi.integral (b) to (a).(y1.y1)-(y2_y2) Am-y=integral (b) to (a)rdA.. dp/dt=2dx/dt-100/x.x×dx/d --- f=1÷2pi×l.c .. Vave=Vmax÷pi×cos$.. Idc=vdc/r.l...vdc=vm-idc÷4fc...vm =vdc+idc÷4.f.c.. Np/ns=vp/vz.... B=u.o.i/2.r.. ______________________________________ Construction diagram network va vb I1=I1'+I1''+I1''' I2=I2'+I2''+I2''' I3=I3'+I3''+I3''' IT=I1+I2+I3 Vab=va-vb Va=Rt+R1+R3×10.. IT=V.T÷Z.T. IL=V×I÷j×I Phasege disphase angular vector diagrame I1=j12-j31 I2=j23-j12 I3=j31-j23 I1+I2+I3=0 --- Construction component start delta banced J.2.3= U/Z.2.3 ; S3.1=U/Z.3.q.. I=Sq.×3×j.../ Sq.2 =U/Z1.2.. Condesator start delta C=Q÷U; Q=U×.U.×C×w Delta =Q=3×U×.U.×C×w Q=3×V×V×C×w C start = 3×Cdeltar.. -Wiring diagram: 1 motor and 3 bulb 3 phase on line QL1=vL1×IL×sin=230×2×96=276 QL2= vI2×UL2×sin alp 2=230×3×0 QL3=vL3×Iph3×sinalph=230×2,3=575va Qt=QI+QL2+QL3=,, 276+0-575=299va ______________________________________ L1 resistor I2 restor I3 neutral in delta L1 =v1.i1.cos1=230×2×0,8=368w L2=v2.i2.cos2=230×3×1=690w L3=v3.i3.cos3=230×2,5×0=0w P=pl1+pl2+pl3=360+690+0=1060w. ______________________________________ Motor eat U:230v/400..i=5,45/9,43,p=5kw.cos=0,8 terminal 9,43 conne2 networking 400V.. V ph=vl÷1.73=400÷1,73=230V, Iph =P/V.1,73×cos=2850/400×1,73×0,85=4,76 ______________________________________ Voltage resistor vph=u÷1,73=230 Iph=P=vphx1.73×1.. R=Z=VPH/IPH=230=130 WA=|Vb|×|Ia| cos (30'+0), wc =|vcb |xcos(30' aph) Vab = vbc =vca vl; Ib=Ic=Ia...zazb=zc=zp..angle Wa= vab×Ia On Tue, 26 Mar 2024, 18:22 tshingombe fiston, wrote: - purpose : engineering practice 24,nqf 6,5,4. month .code trade component -Cabling joint ,frisge;wind armature ;plc;building ; dc convert ;installation;digital control ; design circuit ; installation ; measure knowledge substation; heavy voltage;electrodynamics;electronics ;speed;diode resistancr;generator; hand toolse use; induction systems plc ; inverte ; load magnetic; motor starte ; panel wiring readung megger ; soldering ; steam plant maintenance surge ; treer phase circuit;transducer;electronic circuir ; electronics circuit .. -7.qualification frameworks council .applie mathematics and science engineering for resolved --- -- OUTCOME SUBJECT ENTRY ______________________________________ engineering trade occupation low .work permiy practical eic power system electric . Design : linear circuit lab dc power supply function work low standar size .trade advancedd system integratiob _plant mathematics system . Trade association ammandment. Trade basic advance . x .ex(exlnx+e÷x)x=work exponential logic . -x work operationel factor emped2 x .em product ..e.x logorith activity x inconu add and divided work exponent x work facfor linearity .entry exhibitions motion low - statistic analyse visa technique technologie rating minimum maximums variations x=v , variation x =dy÷dx=d2y÷d2. Low: -x work operation .x en producf e.x logarith activity ,x work factor linear derivative ,integration testing low panel linear ,x operation ac .dc cirrent circuit ,assignments marks week . dy÷dx.working labor operator funda6 sys5 work2.work in time frame allocs5 work step x logic n possib5. -permit 24 month permit mark allocation time table 8 module .. Statements: -ln.Vab=va-vb;lnva=R2÷R1+R2+VT;dy÷dx=X.exp ex(e.x ln .x+e÷x).exp. x Dy÷Dz= ;z=(R.(x.z.z).e÷R..e(RC×Z2÷RC+Z2)×(RC+Z2÷RC+Z2.ln.RC+Z2÷RC+Z2)*exp..e÷Rc+z2÷Rc+z2)exp .Rc!z2÷Rc+z2.. =(I.Z÷2×c×2p ×[1-40÷360]).c×(I.Z÷2×c2p×(1-40÷360).(I×Z÷e.2c×2p×(1-40÷360)×ln.I×z÷2cp(1-40÷30)+e÷U×z÷2c2p×(1-40÷30).I.Z÷2c2p×(1-40÷30) -dp÷dt=2dx÷dt=2.dx÷dt=100÷x.x..;v.c+t.r=2dx÷dt-100÷x.d.s V÷Z.T=2dx÷dt;100÷x,dx.dx;; V1=V2.t2÷T2;dy÷dx..v.vw.t2÷t linear . Low suppliie.. Explanation mathematic : -------- Limite rule Deriver rule Differential rules Chain derive rules Second deruve rules Integral rules _explanation electrotechnic rules Outcom eic symbole drawing Labelling. R.I×IT=R1.I2+R2.I2+R3.I3+R4.I4 Et1-E2=R1.I2+R2.I2+R3.I3+R4.I.4 E2.E3=R1.I2+R2.I2+I3.R3+R4.I4... Rt = R1+R2+..Rn.. Rt //=1÷1÷R1+1/R2 +1/Rn Explain low word leonard methodr speed controk base factor dc motor speed applie voltage armature ..motor generator ;motor drivs la arma3 current Ia .v.t fiels curre2 if decrease motor Ia.. Explanationlow of 4 list smooth speed control over ..the speed regenerative ..usinf over excitation synxhroneb draw back leonard Dc serie motor working 3 characteristic curent vs armature current speee vs torque ..Tax flux .Ia ..equation Eb=p.flux.n.z/60 ..equation toraue flux armature current T=if x Ia .. Advantage serie vast staring torque easy assembly .protection easy .. - peak value ac current and make labelled positive negative sine wave alterations.. Vp-p=2×vp...vp=ac.....vp- 2 vp positive vp - p = 2 × vp , vp-p=2×170v=340..vag Power factor Q=E÷Q,C=1÷2pi×f×c.. ZtotL =zcc//(zL-IR)...; I.I×Z Transfo Zt=Rx.jx.I÷R+jx.I ; I.Z=P.Z÷V.z Rs=V+(max).v2÷I.Z(max).. e1=Em.sin.wt ; e2=k2.Em.sin2wt...;e3=k3.em.sin3w.t - industrial eectronics Test trade 1-losses÷input; 1-I1.R1+W÷V1.I1.cos Wiring design:load field serie parallele Developingcircuit serie parrallele start delta connection .. R×.I×.I=3×.R.×I.×I..; I=j..; I=j..3 .R÷3.×I.×I E=1/R1+1/R2×j×t start . .delta I = j ..R.×j×j×t.. I = j; =j.sq root 3. P=R.(j.×sqr.3 or 1.73 E=3×R×j×j×t E=3×(1/R1+1/R2)×j×j×t E=3×(Rq+Rw)×j×j×t... XI/3; XC.. ZT=1/Z1+1/Z2+1/Z3 ZT=Z1+Z2+Z3 Gt =G1+G2+G3 ..E1=1/Z1+1/Z2+1/Z3×(J×t) E=3.(z1+z2+z3)×(j×t) E2=1/z1.1+1/z2.2+1/z2.3×(j×t) E3=1/z3.1+1/z3.2+1/z3.3 ET=E1+E2+E3.. ET = [1/z1+1/z21/3.(j.t)]×[1/Z2.1+1/z2.2+1/z2.3×(j×t]+[1z3.1+1/z3.1+1/z3.2+1/z3.3(j×t)] Et serie = [z1+z2+z3(j×t)]+[z2.1+z2.2+z3.3 (j×t)]+[z1.1+z2+z3.3(j×t) ET=[1/z1+1/z2+1/z3(j.j×t)]+[1z2.1+1/z2.2+1/3.2(j.j×t)]+[1/z.3+1/z3.2+1/z3.3.(j.j×t). [Z1+Z2+Z3(j.j×t)]+[Z2.1+1z2.2+z2.3(.j.j×t)]+[z3.1+z3.2+z3.3((j.j.t)] Conductance ..impedance .suspectance load ..networks On Mon, 25 Mar 2024, 21:29 tshingombe fiston, wrote: Purposes: saqa qualification n diploma --- engineering code trade component and N diploma log n6.n diploma level theoretically basework skill and practical basework pratical ..component trade manufacture explanation low based outcom low based . "(Plc code trade manufacture design; ;renewables solar.hydro electrical plant power .; ligthing system incadescence compact halogen..electronic component .appliance domestic washing machine .dc machine motor generator ..ac synchronousebmeasure instrument" □□□□□□□□■□□□□□□□□□□□□□□ □□□□□□□□■■■□□□□□□□□□□□□□ □□□□□□□□□□○○ -undertaking material streigth test material rop .("$") package inspection. Check material design ("$") material -laballing sabs code pratical wirie size marking off CODE CABLE PLASTIC POLYSTERE ..CODE MANUFACTURE ("$") w.gauge eic -soldering ensemby ddiensemby component step .. -interprete drawing circuit scaling ("$") - electrical wiring panel interpre("$") ..controll programme ("$) -prephase select trade pratical theory Trade test preparatory functionning marks process □□□□□□□□□■■□□□□□□□□□□□¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ ●●●●●●●●●●●●●●●●●●●●●●●● - Phase final qualificatiom 1th2th..3th..4th □□□□□□□□□□□□□■■□□□□□□□□ ■■■■■■■■■■■■■□□□□□□□□□ SCOTISH EVODENCE LOW On Mon, 25 Mar 2024, 21:05 tshingombe fiston, wrote: Purpose : -Explantion :module peogrammable logic controller explanations wath a pkc is function a programme logic controller device component use languages for commande for industrial automatic industrial .outcome: -statements .the component of a plc . Used switch input output device . Relay controlled transistor thyristor ,diode -unity upc central computer . -display monitor control interface . -explanation what a plc is used : outcom ;for is use for compare information and compulate suply information relat contactor informer conductor for suply power - Language used to peogramme plc used fortain q basuc visual .. Input outpur .. Outcom is programe switch control input .output device read information circuit ..off and on relay control contactor switch transistor thyristor current programme. - ligthting systems .explain with the aid of drawings the operation of the following. -outcome incadescent lamps : socket incadescent bulb is contracting by glass circular and close culot switch culot switch and cement and wire resistance high resistivity tungstens and powr of hg gaz input in side is operate by ohn current flow the wire in side enclose joule effect give colour and hg gaz electromagnetic of charge disxhage energy.. ..I=u÷r..E=R.I.. -compact fluorence lamps : is working by glass tube cathodic have to side switch contact ..and side gaz of fluor chemical in side have a coil stander Nd condensator filter resonance for correct power factor in parallele with pole cathosic operationel when pples contact current flow cylinder bulb is react chemical hg fluore beam ..electrons acceleration..give effect . -halogen lamps : is construction or aorking by labeled and polyster and mercure ag pres5 gaz chemical by fire give explosion.. - metal halide lamps .is same IMpe fluorescent or the same white compact fluorence wire heat -..neon lamp icadescense .high intensity discharfe - reneeeable energy : solar energy statements the advantage is no cost and working working current not dischage the cell .explain solar energy is conerted into electricL by plaque semie conduxtoe photo emissions photonconduction P.N doppinf react and conduct electromotive force bonding covalent.. -explain how: direct current os converted into alternating is converted by follkw step energie solaire periodic floa movement bond p.b junction continue dc current and step dc to ac follow thyristor gate control off on active On Mon, 25 Mar 2024, 18:53 tshingombe fiston, wrote: Purpose: -Explanation low .speed control of motors : mean outcome normal speed above normal speer increase back emf fall resistor resistor has been cut and the motor normaly . - explanation low how shunt swries motor can be mode to run at three speeds fields coils of a series connected armature carry current no load and full load speedly load torque load.. - explanation dc machine testing name test to be performed on dc machine in order to assess its condition dc methode rope brake test couple sainburg method ..outcomes ; T=(W-S)×r.. Efficiency =V×I÷V×I+I"a×Ra+I. -Explain each of the test mentioned in above .air cooled .pulwy belt ropes scale , mass reading ,indirect given in above .. - Emf .equation of generator. Drawing the characteristic curvers of generator clearly showings the following..terminal full load ..I . Outcom - open circhit terminal voyage agains field current . - calculate the magnitude of the generated .e.mf accross the armature ..emf =V+IR.. Outcom cLcule the magnitude of neee for compound - wound generatoes .. -efficiency testing of dc machine all constant and variables losses that occur in dc machines ...efficiency =ourpur power ÷input power ×100.. Outcome : armature loss = I"a×Ra..watt Windage loss iron loss in the core bearing friction loss commutator .. - explanation: why the iron part of dc machines are laminated for direct man. Name all constant and variables losses that occur in dc machine .. - iron part machine are lamited .outcom reduce losses magnetostriction - caxulate the efficiency of dc machines using method ..outcomes directmethod methode summation losses ..regenerative methode back to back trsr ..V.I-(Ia.Ra+Is.v+C)÷V.I ×100; 2pi.nt/60.. =2pi.n(w-s)×r÷60 ; input =V.I.. =V.I÷V.I+Ia.Ra+I3.V.Ia ×100 -starting of thre phase induction mktor ..explain slip with regard to three phase induction motors similar to that of a three phase rorque maner order.. -Explanation calxulate following slip : synchronous speed actual speed .. outcome .s=N- nr÷N.. .s per unit slip .N = synchronization speed of fiels revolution minimum ..nr = actual speed of the rotor ..explanations with aid of circuit diagram how three phase induction motor are started using .the following methode outcom direct on line starring ..reduced voltage starting .motor resistance starting ..small motor torque of fan is proportional to the square ..Vph=VL÷3 - synchronkuse alternator compare the construction of a synchronous alternator with synchronous motor .. - explanation with aid of circuit diagram how two single phase alternator are synxhronised a common busbar system .- synchronous motor low .outcome a synchronous motors is wound magnetic field stator and rotor coul is in the same level speee fiels nr is equal to na actial .slip rotatinf flux slip percentage .. -explanations how this motor can uaed to improves the overalk power factor of a plant in the case of shunt motoe the movement the armature short circuit outcome; no - volt coik and it energise in the case of a serie motor switch ofu exceed predetermie. - explanation transformer: cooling of transformer ..explain the need for cooling of transformer losses air coolinf small transformateur ..oil cooling ..tfo ib oil tank minerak .. - explanatort need for cooling of transformer ans : losses in transformation .. -Explanation the differences methode used to cool a transformer methode aur coil is use small transformation.. Oil tabk the heat is transferred the windinf oil conductive - N1.N2..I1÷I2..V1..V2.....m.. - protection of transformers explain moisture form overloads short circuit .lossses in a transformer .distinguish losses transformer self induction using transfo ..auto trabsfo ..for step using cooling of transfo earthing transfo discobbectiob hr.. - explanation earthing system ; outcome : equipment power statuob .shield conductor diagran IT network .TTN work .. - explanation: w supply neutral conductor suppliers consuctor must determination consequencesof protection earth poinr tank supporr structure earth continuiry conductor... - explanation power management: outcome; domestic and industrial consumer billing system energy charge of domestic consumer the two porr tarrif that large consumer are charged prepaid metering system - maximum demand time swirch time time of use ripple relay radio conyrok tarrif mcb consumer demand ..I×cos.. -renewablw enwrgy salon energy state advantage solarw dc converted ,ups ..uniterrupted power supplie.. Explanation programmable logic controller plx ..comment used language is plc On Mon, 25 Mar 2024, 17:33 tshingombe fiston, wrote: Purose :learner examination completed Applies skill electrical trade theory , electrotechnology ; electrotechnic ,control logic .logic system to resolve engineering electrical .science engineering outcom design analyse qualification framework low exhibitions value examination evidence - appliance explain wath is an appliance the two classe of appliances three cateforie of appluance ; evidence outcom fixed appliance tools portable appliances stationnairy appliance .cooking appliance .. -explanarion low assessments : the basic principle of operarion of an induction .cooker operation of the following. - three theat stove switch .cooking appliance include built stoves oven hobs an like -simmerstat switches -rhrouht fixe winning isolate earth stove 16A rating ,socket 0,5m. 2,2mm. - oven thermostat switch .. -explanation evidence low .the principle of operation the following type of space heaters.;of space ; outcome heater ,convection heater ,infared heater,radiant heater,ceramic fan force heater ,micathermic panel. -smerstar energy regulator tje bending of alimentaire strip which opens and close a set of contact a heating element whic supplie heat.. _water heater : explanation the principle of operation of the following types of water heater , tank less water tank less water .heat pump water heater solar power heater condensinf water heater condensing water .explain with of drawing . -washing machine type available. Explanation. The principle of operation of the following washing machine outcome low semie automatic fully automatic.. low speed meduim speed high speed -explanation of type of ligthing : 3 type basic of ligthing ; outcome ambient ligthing general ligthing .task ligthing accent ligthning..lamp incadescence lambe mercure vapour . -explanation emf equation of motor dc ..outcom calculation magnitude of the back emf induced in tge armature.. _explanation and design drawing the characteristc curvers of motor ..outcom flux agains field current ;speed against armature current ; torque against armaturw current ;calculate the torque exerted by the armature of dc motor. - explanation: non sinusoidal waves dc determine the form factor of non sinusoidal wave.voltage .max min time - single-phase circuit component have on the current in ac circuit :outcom resistor ,inductor;capacitor. -explanation different betwen algebraic and vector facto quantity .outcom fresnel diagram v.i ..E=V+I.R.. -explainatiinnthe conceptual impedance and alsi calculate the impedance and a calculate the impedance of the following loads . Square root / Z"=R"+(XL"-XC") -resistance Z=R, -inductor Z"=R"+XL" - Capacitor Z"=R"+XC" -explanation draw waveformand vector phasir diagrams for followingcircuit.. restance vector I_______》V... Inductive |_______> -explanation resonance and effect in serie outcom X L=2×.f×.l ×pi Outcom low statement and determinent effects power poor factor and show by means of simple diagrams how ican correct outcom P=V×.I.×cos ...Q=V.I.sin.. ____________|----- - explanation.three phase balanced load : IL4=IL2-IL3 ..ip .×cos.×30" Outcom statement the advantage of three phase system over single phase system .three supply is more versatile machine deliver high sam size.. -explanation drawing the wave forms and vector diagrams the voltage distribution.. - three phase system : statements the relationships between phase balanced load type of load : P=(Vp×Ip×cos@)+(vp2×.Ipe×.cos@+Vp3.×ip3.×cos@) V=3×.VL×.IL.×cos@×n -explaining low three phase unalanced ..explain difference between.and unbalanced load - balanced system three pine current are equal having start neutral zero current diffente IL1+IL2+IL3=IT - draw vector diagram of three phase ubalanced load is calculated . On Mon, 25 Mar 2024, 16:30 tshingombe fiston, wrote: 5.Purpose: entry criteria minimums. Trade qualification occupation test trade Industrial orientations. -5.1.knowledge:recall and understand application industrial orientations:design analyse investigate engineering studie learning base vocationel means evaluation :didactic module focuse question and answering: -Standard in trade .industrial council -development service close cooporation compagny educationel _supervisor function control task subordination teach workness - unsafe working iso 1900 financement new project business venture . -purpose independent capital business conduct unsafe condition. - planing work advantage policy training. Meetings new employee control exercise main power . 5.2. Knowledge recall and understand .applications. plant operation : Chemistry : and chemical process good examp cellulose wood rubber .C.H8. -organix solve acetan catalyse react .original main purpose. -react gaz N(0g)+O2(g)=NO2(g), NO2(g)+Co(g)+Co(g)=(Co2g) C+O2=Co2..70% combustion, H2..H2+1/2.02=H2O Convection radiation conduction compression mettall hydrogen oxygen present steam boilem .. hsu=hf+(xhfg)_[(tsu_ts)] 5.3 knowledge recall understand application electrotechnology: Dc machine protection : poles shoes , shifting 4 factor average vLue .sin define ..tree singles transformer , decimal number necessaire step serie motor application. 5.4 knowledge : recall and understand , application electrical trade theory ..appliance electrique washing machine domestic appluance type machine maintenamce installation..illumination , ac , dc current machine transformer instrument measure material -Exam trimester learner 2 formal class module 100 mark duration minimu pass mark promotion mark 40 +60.assessment. On Sun, 24 Mar 2024, 21:06 tshingombe fiston, wrote: Purpose: re -agreement distance university years occupation semmester pass examination college university degree research topics skill development university rsa -qualification equivalente --- |Id saqa :96856 |NQFlev6| 3 years | of experience: --- |technical tvet | university | |college subject |exempted subject --- -communication n3, |communication |N4,n5,n6 ,nqf7. | skill:1,2,3, | English business Orientation industri Supervision manag Communic at skill adm| ______________________________________ -computer n3 | N4,n5,n6,nqf7 |computer skill | 1,2,3, Info manag syst | introduct ims Information manag | Info process It ______________________________________ -mathematic n3 | mathematics 1,2,3| |N4,N5,N6.nqf7 ______________________________________ Industrial electronics | electronics 1,2,3 N3,n4,n5,n6 nqf7 | Electrical trade theory| power elect1,2,3 Electrotechnology | machine elect Electrotechnic | Control logic |control electri1,2,3 Logic syst Digital electronics | Radio television Radar missile ______________________________________ engineering science| chemical 1,2,3 N3,n4,n5,n6 | physics 1,2,3 Plant operation | Power machine | Science buildings | Carpentery | Wood work | Bricline | Civil Diesel Mechanotechnical Turning fitting ______________________________________ On Sun, 24 Mar 2024, 09:29 tshingombe fiston, wrote: Theoretical framework base Experimental experience outcome: engineering electrical Fundamental basic electrical trade _construction trade Opwrationel trade low rules applied trade skill to resolve trade skill or science engineering. -applie sabs code of pratice wiring premise .trade Construction component structural theoreticak ..operation safety trade tools safet i rules narse plat machine building ..sign fire smoke ;injuries fire hazard cut space save damage of good is prevented. - cell advantagr distange of component .construction single high efficiency at full load silent oper2. - transfo little core and maintenance .open aire cooling coding transformer assumef..secondairy cell advantage great capaci2 thsn primary cell deally emergency application life ..disavatage more than primary cell regular maintenance period traditionallt less suited for ..code collour sketch eic .carbon resistor potention variable capacitor zener diode p p transistor battery cells .polarization carbon extrinsic ionic bond.. -Dc machine theoretical applie .component yoke poles shoes bushes back wand motor moving brushes in generation poles field series .number of pairs of used .strength magnetic field .radte magnetic flux cut the moving conductor number field. -generator ward leanard motor generator system .shunt generator used where constant voltage is require. Series generatir a booster on dc line transmission line .. Flux armature .. -trade applie skill to resolve skill : domestic aappliance ..washing machine imersion water heater protection steel conduct pipe earth -ac machines measuring instrument electronic. Material used in the manufacture of semie conductor - special characteristics: special arc funace transformer power require.. - control system like componentation electrical network allowed for process to monitorred regulated environ control system or overall electrical. Static control .analogie conversion . -electrotechnic principal. Nuclease positive low directly proportional type algebraic sum emf principal change in flux linking with circuit . - movement of conductor in a magnetic field .increasw decrease curent circuit .carbon brushed .graphite copper graphite.efficiency load 97.moving silence magnetic circuit winding tank protec3 refrigerator. - connecting electrical .machine pratical tips for connecting. - make sure rigth joint .check size of lags .make sure crimping tools that .fit . Purose of joint :installation core inslection of equipment locating of the rigth tools for jobs . Make sure tha yo know tools box organised store tour tools safe Fundamental low skill formuler : Explanation caculuation valut size ..coulom.newron joule ..theorem - engin2 drawing .welding pc drauting joint meyal ..screwthred arc welding resistance lab joint corner join butt join sc first angle orthographic projection coupling projection machining On Sat, 23 Mar 2024, 17:19 tshingombe fiston, wrote: 2.purpose : criteria entry trade ___________ theoretical and pratical examination n diploma subject .occupation council trade and qualification trade engineering studie field Subject : electrotechnologie ,trade theory electrical , orientation industrial, plant operationel ..industriel electronics .engineering science .engineering drawing..electrotechnical .drawing engineering Trade -Outcome subject : trade orientation and industrial sector growth in developing countries sadc . -industry orientation exporting and productivity manufacture way engineering electrical system -econometric methodologie : trade requirements operationel task step -estimation : depended variable is log labour productivity skill development chieta merseta training authoritu saqa X freq : -Acknowledged: scaling module task subject trade industriel requirements logic methodic ..energetical supplie saling buying commissioner. Metering installation building db box lab workshop electrotechnologie undertaking material redesign. -classification of manufacturing: Model industrie sector primary mining mineral electrical engineering secondairy industriel production component .and industriel production energy or municipalitu revenue commissioner customer: according sabs. Act hortoring eic..coding industriel trading . - labour intensive industrie: industrial vulcanisation . -manufacture :joule -labour intensive industrie: industrie scale manufacture -specialised supplie industrie : compagny trading . Solar panel manufacturing ;transformer manufacturing ;business ; cctv camera manufacturing unity .television .display device :robotics mechatronics industriel -single double door refrigeration industrie washing machine repair ;phase AC motor panel industrial;water puri2 repaire -introduct to electruc trade job opportunity: safety precaution and typist .tools equipment - how 2 way switch electrical board work wath stones bridge key: - industry orientation:training job market emplyment are looking candidat industriel tools team build assessment. Understanding market orientations and how it works wath is market orientations custome market orientation vs other strategies real work market pratical trading essential trader interactive broker trading -| |star ratinf |min dep|stock trade|perc|| Load min -amen trase Interact Tasty trade --- 3.Purpose: pratical trade national frameworks qualification Relate theoretical framework based vocationel -requirement: 3.1tools instrumental - trainee tool kit no 1 _scribe 100mm; hacsaw frame withblade 300mm ..no : 2 -Hsc drill bit 6 mm .3 mm - round nose plier 150 m. Grimping tools ..- instrument equipment 3.2Digital multimeter ; megger 500v -.contactor 4 poles ;16A;240V;2 no ; timer 3.3 material : -Push button green /red.. -indicator lamp with holder - overload relay 0-15A;415v - race ways 2-mwter . -1,5 sqm copper cable as to 650V - terminal connectoe 0 . _ wirie ferule ,connector ;cable blinding shapes; shaps button ,nylon cable assort size ______________________________________ _design |Logic input| output logic pin no| A/|B |3 |6 |8 |11 | |0 | 0 |gate 1|2|3|4 Condition gate ic ______________________________________resistor design Serie numbe|sketch ref|type of | symbo □□□□□□□□□□□■■■■■■■■■■■■● ●¤¤¤¤ --- -Pcb track design: □□□□□□□□□□□□□□□ □□□□□□□□□□□□□□□□ -Construct power control circuit scr: PREPARE -Halfwave: 240v,50 ; 24v..vdc □□□|■■■[-Ac supply 415..dc control supplt .driver .dc motor ,dc generator 200v load ..200w Serie number |load|armature voltage Load volt |current motor speed in rpm □□□□□□□□□□□□□□□□□□□ SW1 S 3u v w 240v □□□□□□□□□□□□□□□□□7 Wiring diagram of dc driver The panel board used fix panel meter and indicator front 1.identify and selec prepare range _make size |rate main | rate power kw Switch mcb ,4n ,500w, On Sat, 23 Mar 2024, 09:40 tshingombe fiston, wrote: Application : Ref: letter number :2024/0322 -Saqa id ref:201911130002 - Saq enquiry: 9370; -Dhet: 2100002023812; 2004007064381 ______________________________________ Enquiry No:. -Name of institution: st peace college -Date of application:01/03/2024 -Date of start :19/10/2019 -1.qualification: title engineering national diploma .award ..rd congo Assessor moderator Subject electrotechnology. -2.qualification title :title engineering n diploma. Student electrical engineering _3 qualification title : skill trade panel waring i Chieta ..C0700410101099 pratica seta electrical . _ start qualification award institution Saqa work day 15 . Graduate criteria decission 15 day evaluation on pre work..registration Policy le099 ______________________________________ Qual |qualification |level|nqf| min | repla Id | title | | cred| ______________________________________ 20420|national cert | lev 4 |120 | | electrical eng| ______________________________________ 20418|national cert | lev2 |120| | electrical eng ______________________________________48475|national cert |lev 6 |120| |electrical eng| ______________________________________ 80160|national diplom| lev |360| I,II,III | electrical eng | ______________________________________ 90674 nationa n diplomat studie eng Nqf level 6 67043 | n diplomat | purpose ______________________________________Id 67491| | N3 to ;n1n2 ..subject pass Electrotechnology. Orientation industrial ______________________________________N4 |electrical engineering irregularities subject recertification in progress marking quality councils insurence body dhet electrical trade theory ..n3 ______________________________________transcript record NLRD: saqa national record databse : Saqa ID 66881 transcript bachelor ______________________________________ 15 days work topics in nated pratical theoretical framework: .award saqa ______________________________________ Ref:, Dhet: topic career subject -businesses english : topic cvs. cover letter compagny -orientation industrial : -supervision: planing management supervisor Hr communication . Assessment lms :Learning dhet .completed form underpine poa poes learner:toic pratical coverage textbook explanation last papper vs compagny trade challege viste trade practical irregularity subject Material irregularity for pratical class room space rental location accommodate space ..theoretical compagny trade -city power eskom vs trade seta psira ref city power work metering generetor transmitter ligthing can not support practical visited vs dtic industrial manufacture mining illegal manufacture component vs topics challenge class rental insurence workplace _1Purpose: operate electrical .wiring and control wiring and control switch Explanation topics research n1.2.35.6 final research topics .. Award police cat meeting requirements Submittal online proposal On Tue, 27 Feb 2024, 09:59 tshingombe fiston, wrote: Application Ref: Applications letter number: 2023/1226 ______________________________________ ADRESS: PRIVATE BAG X 174, PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL: 0123235618 ______________________________________ ENQUIRY NUMBER: DHET: DOCKET NUMBER: 2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME: ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA: 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER: 210020223812, 2004007064382. -email address: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com ______________________________________ APPEAL DECISSION RESULT RELEASE: APPLICATION NUMBER: Saga: institute foreign .saga transcription meeting 71638 dry Congo requirements graduate award diploma knife .high certificate no meeting .leave school .expended assessments .exam d teat diploma .certificate professional .certificate informatics mathematic vs. offices ; result outcome primary status registration saga asset 09121 .saqa institute 30_ 39 no assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat -Qualification title national N diplomat engineering. -nqf level:6 . -date submitted to dhet :1105/2023 -date process. DHET -Timetable /50111002 -N1: engineering studies -ID: 2004007064381 -ID: 2100002023812 ______________________________________ Dear .mar minister of education duet and deputy member of duet .vet college examination directorate and authority competencies. Government's president I' mar tshingombe tshitadi ;acknowledge student st peace college candidate examination career student follow course in duty of nated in rsa 2019 to 2024 , i 'm appear to your department goverment institution for allegation view no result of statement id candidat engineering n1.,n2, n.3,n4 ,n3 and n diplomat saqa outcom in irregularity final n5.n6 /nqf 6. Examination national examination was not delivery in the time external assessments commited irregularities. 1.my motivation and disciplinary assessment submitted my portfolio on line portal duet release resultant statement and finalized award diplomat by examination committed irregularity November invalided subject n3 trade theory electricakbtranscript the result of assessment was note release reason irregularity n3.subject n4 .subject fail druip result February 2022 .directorate assessment transcript material .statement affidavit submitted sty peace college registrar shalom technical and agric institute college no result outcome .after 15 days was result scaling n1.n2.n3but statement didn't come out not print out by registrations resentment inconvenient. Arbitrary irregularity on February I submitted topics saga cot dhet email result of saqa documentation; filing dbe dhet .the committed was under investigation soon to finalize. 2. I received to duet committed assessment examinations irregularities the retain , invalided subject 23 February 2022 the time table of n3 subject administration exam with those subject trade. electrical trade theory .4 subject November 2023 examination rhea result statement for last examination was not print outcome n1.n2 submitted n3 last time table exam only last n4 exam statement print outcome and not time table for n6.,n5 received in examinations November suspension is 11 month for irregularity .follow vet guideline assessment. Exam over the date insurance body frameworks qualification and labor department if could claim no outcome in career portal was outcome granted national fund skill for extra subject topics irregularity written cot practical was not granted scope portal research cot . 3.allegation result statement retain duet .;saga n diploma n diplomat application for n4.6 diplomat final was no granted n4.level 4 diploma ices years college in my portfolio submitted on line marked exam n5.n6.subject additional assessment information by institution is at ices. Ref outcome saga result 16 Jan 2023 on line maraschino massage send submission number foreign institute inquiries 9370. Foreign institutions inquiries 6594 Section 29(a) policy criteria saga knife amended march 2017 institute ...framework nqf foreign award must meet for recognize. Saqa accepted only qualifications official examination body country...external examination based, 26 July 2022. 4. Allegation to qcto retain on; saturday22 January 2022. ; With regard n certificate direction dhet education training (for n4_n6 n diploma or umlauts n3 can not assist with qcto issued Sat ..10 march 203 I .certificate@qcto.org.za answer soc please note that the qcto does not issue any of results -lindiwe grace 28 may 2023 inquire to national and assessment college .i have copied our QA unit they will be able to rspond to accorlingly regardc Qcto khuluvhe labour market intelligences lmi esteemed stakeholder 21 aug 2023 was not grante - i receiving Allegation to saqa retain on.10 march 2023 procedure for evaluatiin pro forma invoice .copy id passport.copy final award graduation certificate. Copy of completed transcript mark sheet academic record.proof payment if not meetings requirements can resubmitted again.non compliant; 27 july 2021 application above doe s not meet saqa Final award school diploma degre certificate in 48h . -that my requested letter to the authority minister for my result statement certificat over the date review n diploma 24 month.18 month nated examination to resolve problem after examination irregularities materiel that final result n4 and new re certificate body insurence investigation result center assessment outcome years icass total tvet for my institute st peace college institu and externsl certificate n1.n3 afric training institute and shalom technical collection print out was not in my application for diploma response from dhet submitted to resolve conflic assessment examination. - Your sincerely. Sign :Tshingombe Tshitadi __________________________________ An.n3 .in the relevant specialization area communication nqf level 4 in language teaching ...theoretical knowl2 and practical skills required and learning of institution offering. To be award the award qualification learners are to choose complete .business studies 0.5 years business studies. .N4 o.5 year's duration 60 cresits ...n5 (0.5 year duration) 60 credit .n6. 0.5 y E-mail Disclaimer: This email and any attachments thereto may contain confidential and proprietary information and is intended for the recipient only. If you are not the intended recipient, kindly delete the entire communication and notify the sender thereof immediately as the information contained in this communication may be privileged. You are further reminded that copying, distribution or disclosure of the contents of this email may be unlawful and result in legal action against you, in the case of you not being the intended recipient. 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You are further reminded that copying, distribution or disclosure of the contents of this email may be unlawful and result in legal action against you, in the case of you not being the intended recipient. Whilst all reasonable steps are taken to ensure the accuracy and integrity of information transmitted electronically, information sent by email is corruptible. SAQA does not accept responsibility for such corruption, destruction, damage, infection, loss or interference of whatsoever kind and howsoever caused that may be suffered as a result of receiving this email. g [TYPE THE COMPANY NAME] [Type the document title] [Type the document subtitle] pc6 [Pick the date] [Type the abstract of the document here. The abstract is typically a short summary of the contents of the document. Type the abstract of the document here. The abstract is typically a short summary of the contents of the document.] 1. Purpose: explanation career center expo science journey of self discovery. Workbook is a compilation of adapted formal assessment brief career -project exhibition -Name : tshingombe Tshitadi -Date :17/04/2024 Section A: subjects and studies Section B: skills and ability strengths Section C:my career interests Section D: preferred field of study Section my personality profiles F:work values .-design assessment: -1.subject entry: A, A:[career electrical technical]--[mathematics informatics :B]---[motoring :C]-- [Saqa award degree level: D]-- [Engineering electrical: E] --- [panel wiring: F], [Skill inventory: G]--[functionality transfer skill] and outcome's. --- [Engineering technologies science studies [research Education and training arts audio visual technologies communication architecture Ana construction]. -subject :key design -10. print "a" -20. print "b" -30. print "c" -40. print "d" -50. print "e" -60. print "f" -70. print "g" -80. Print. "h" -90. print "I" -100.print "j" -110.print "k" Sub __________________ 120. input "a1" 130. input "b1" 140. input "c1" 150. input "d1" 160. Input. "e1" 170. input "f1 " 180. Input. " g1" 190. Input. "H1" 200. Input. "i1" 210. input "j1" 220. input "k1" Sub __________________ 230. output ("a1"+"b1"+"c1") 240.output ("d1"+"e1"+"F1") 250.output ("g1"+"H1+"I") 260. Output (j) Sub __________________ 270. if ;{"a1"+"b1"+"C1"}=1 280. Else="t "_subject =next step 290.if ;{"d1"+"e1"+"F1"} 300.else" t " subject :next step 310.{" g1" +"H1"+"I"} 320.else 330. If and . subject step =1 340. Show :outcome display .350. Next. .string will _____________________ Projection: technologie outcom project career: Design circuit principle career explain diagram ____________________________ Design logograms:. --- Designed Algorigramme. -- Designed table: -a --- Design technologie career psychometric Education: Variable -education training Sequence series port impulsion contact mother feeder . Career total guidence learning CVS switch term work value way cluster selected box peer - Logic process ------------------------- A=011111111111 B=001111111111 C=000111111111 ____________________; convert binaries .dec D=000011111111 E=000001111111 F=000000111111 -------------------------------- G=000000011111 H=000000001111 I =000000000111 -------------------------------- J =000000000011 K=000000000001 -------------------------------- L1=. 1 ---------------------------------- L2=. 1 -------------------------------- L3= 1 --------------------------------- L4=. 1 ---------------------------------- -Educ technologie career psychometrical : Education logic processes,code module Mode phase switch Variance; term ------------------------------------ XA=011111111111 XB=001111111111 XC=000111111111 ;sum =XA+XB+XC ------------------------------------ - XD=000011111111 XE=000001111111 XF=000000111111 ;sum=XD+XE+XF ------------------------------------ XG=000000011111 XH=000000001111 XI =000000000111. ; sum =xD+xh+xi ------------------------------------ Xj= 000000000011, sum Xj=000000000001 ------------------------------------ ; Product switch ------------------------------------ .-Reder subject outcome: module week term allocation .phase transition outcome level career: elementary, intermediary, senior. Current -Conductor .semi -conductor switch key career learning: logic binaries code Module subject average career guidance: -Module career (sum "a"+"b"+"c") ;(sum "d"+"e"+"f");("g"+"h"+"I").; - Task career step operate logic input output module learning sum. Module phase elementary, phase subject , Modulation scaling block career input ,output phase -Phase A,phaseB,phaseC,phaseD,phaseE, PhaseF,phaseG,phase h,phase I, -Activities:key learner ____________________ Module: ligth resistor. Induction learner bulb : ------------------------------------ Module :rectifier redresseur phase angle ,diode operator phase sum career 5v logic 1,0r logic 0 volt Diode code encode display : Resistor: Module : phase career amplificator career gain .module transistor, % good average -------------------------------- Module disc triac thyristor integrator circuit . Display subject . % good ----------------------------------- .line linearise Control logic analysis asservissemnt:lineare band : --------------------------------+---+ Loop input output level grade: sum compare career: equivenlent job input output: dividers job analyze function job task. Switch. Binary .task: modulation course subject entry criteria job selected key (phase a. Subject electrical) statement goal tech industry, psychotic electrical drawing project, method measure instrument. Electrical machine, electricity industries, mechanical workshop lab, language. Actuality electrical grade bulletin service: .education technologies total posting job output internet ship level grade 12 (and) /logic mathematics informatique ms do's window ms work windows, outcome certified statement award , attestation test motoring initiation special diesel essential vehicle, statement , telecommunication, pedagogue technical subject prep. Math physic drawing technical technologies mechanic electrical logic,rwiten sleek expression civism, electrotech , psycho pedagogie,didactic special ,intro psychopedagogie, orientation professional, electromechanic machine elect thermodyn chemical metalurgi statistics, ------------------ Task phase :Ccma seta council labour , outcom -security Task phase:Engineering saqa n diploma subject engineering n diplome interpretation log : assessment -panel electrical wiring Subject statement outcome: course module mathematics, engineering science,trade theory electrical , engineering drawings,:electrotech electrotech. National trade diploma , industrial electronics trade , average, assessment police , career : Graduate program: Alison , Microsoft, schedule :, Ccma labour security officer,policy intelligence Records ____________ -modulation 3month 90 days allocation credit 360: term . Outcom career transmission generation Graduate:post senior Total: faculty course total computing -guidence outcom generation: engineering senior :engineering transmission dispatch custom +Dev op information ITC mathematics data science network path+special research motor +trainer training seniors educator technic ,job post subject , generalist A1,2, -sum a,b,c=. ,sum ,d, e,f=. sum= g,h,l: Asservissemnt synchronisation phase level equivenlent level grade,phase Angela 3month linear non linear scale synchronise , equivenlent trade, professional - task module reader Modulation ,activity -Research operationel:method research career implementation career join venture subject course tendered minimum close contractor quotation compagny key learners step A+B+C Module -research phase oscillator local signal A B .command network services -display register key .plate .display line pin address.vertical map, horizontal map AX=100000000000,AY=10000000000, Az=10000000000, , base synch Amplificator operationel Ax,Ay,Az Resolve variance ,covariance equation linear ax+by+c=0, .ax°+by+c...ax+by+cz=O.. 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Referral librarie casebook photocopy project DISCOVERY CAREER ; -JOB DISCOVERY LIBRARIE; BOOK JOB INVENTORY JOBCAREER CAREER -LEARNER DISCOVERY CAREER: JOB TOPIC CASE BOOK COMPAGNY -FACILITATOR DISCOVERY CAREER: JOB TOPIC CASE BOOK COMPAGNY AGREEMENT -LEARNER NAME:…………………………………………………………………………………………… -FACILITATOR:………………………………………………………………………………………… NAME: …………………………………………………………………………………………;………………… -MODERATOR NAME:……………………………………………………………………………………… -ASSESSOR NAME: ……………………………………………………………………………… INSTITUTION NAME:……………………………………………………………………………… HR:RESOURCE FRAMMEWORK: CLOSE COMPAGNY LIBRARIE PUBLIC JHB: SCIEBONO CAREER CENTER LIBRARIE: COST PROJECT FILING: Tools assessment librarie and material assessment project librariecareer center ENTRY CRITERIA /TASK BOOKING MAGAZINE ID ORDER BOOKING TOPIC BOOKING COST BOOKING TOPIC PROJECT COST COMPAGNY DESIGN/ COMMENT REVIEW WEB SITE: NEWS PAPPER MAGAZINEGUIDELING TVET OUTCOME EXHIBTIION PROJECT COMPAGNY ENTRY CRITERIA TASK BOOKING MAGAZINE ID ORDER BOOKING TOPIC BOOKING COST BOOKING TOPIC PROJECT COST COMPAGNY DESIGN Inventory framework education lesson plant portofolio teach engineering : 4x6 subject = , 120 volume record textbook , engineering nated n1,n6/vs 10 copy exam papper theory practical subject : Literature code practical trade , eic nated teach code work .. Inventory engineering framework assessment plant work project formulation note book Code engineering TITLE: ASBN: AHTHORY: SUBMISSION: ORDER BOOKNG ACCOUNT: EXHIBITION JOB BOOKING COMPAGNY: TRADE BUSINESS JOB : EXHIBITION POST JOB JOB ENGINEERING STUDIE POST TECHNCAL, SCIENCE ENGINEERING ENTRY POST EXHIBITION, S JOB SECURITY /ENTRY STUDIE, POLICY: ENTRY EXHIBITION SCIENCE ENGINEERING JOB DISCOVERY NATURAL ANALYSE INVESTIGATE DEVICE JOB JOB REQUIREMENT: JOB ABSTRAL: JOB PURPOSE: JOB SUBMISSION JOB KNOWLEDGE: SCORE: MISSION, VISION GOAL AMANDEMENT, REWARD , EARNERD BADGET RECORD SCRIT CERTIFICATE POINT LOYAL COPYRITHH JOB Cost project estimation value award studie discoverie revised cost made : labour insurance coid award , social work ENTRY CRITERIA TASK BOOKING MAGAZINE ID ORDER BOOKING TOPIC BOOKING COST BOOKING TOPIC PROJECT COST COMPAGNY DESIGN Discovery sciebono 16pg review R Assessement Career R Scie bono discovery centre , scie bono science career cente my journey of self discovery Discovery R guid Assessment considerer R How to build your self a bridgth technical future Consider atechnical career let get down to to work how do I play play for my th fact how to built your self R discovery book TOPICS CARER Planning R -workplace readinees ,module 2 career development prticipale R Activity example tip toolkit R Topics: career planning , wath is career yourself - Exploring your option - Making informed career - Take action education skill civi Birthday parties Id guid Assessement R2200 R2500 Planetarium paking Clumbing wall package secret lab Merseta , inseta , Guide Chieta Assessment R Manufacturing engineering and related service seta Determine level framework manufacture level subject open ,vocation ocuupation , skill program , registration learning , rpl programe registration difference Occupation tvet college list Skill employment unity existing emp[loyer Minin qualificaion Saqa , -civil engineering saice -science and technologie / nrf/saaata R Guide joint the dynamic wanted of mining and mineralised Topic:s building concret road way municiplity Topic: nanotechnologie electronics nono science concil science , material semie conductor safety , transistor computer memo rom ram , Topics industrie , industrial , electrical building draw Gr0 g Appeal statement result .award degre diploma certificate n engineering studie Inbox tshingombe fiston Tue, Dec 26, 2023, 12:25 PM to me, tshigombekb, maraba.a, lundt.s@dhet.gov.za, tena.m, lutuka.m, president, esther.rammultla, modiba.d, dmandaha, callcentre, careerhelp Application Ref :Applications letter number : 2023/1226 ______________________________ ADRESS:PRIVATE BAG X 174 ,PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL:0123235618 ______________________________ ENQUIRY NUMBER: DHET : DOCKET NUMBER :2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME :ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA : 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER:210020223812,2004007064382. -email adress: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com ______________________________ APPEAL DECISSION RESULT RELEASE: APPLICATION NUMBER: Saqa: institut foreign .saqa transcription meeting 71638 dr congo requirements grasuate award diploma nqf .high certificate no meeting .leave school .expended assessments .exam d etat diploma .certificate professionek .certificate informatics mathematicsvoffics ; result outcom primaryb status registration saqa asset 09121 .saqa institut 30_ 39 nc assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat -Qualification title national N diplomat engineering. -nqf level:6 . -date submitted to dhet :1105/2023 -date process . DHET -Timebtable /50111002 -N1:engineering studie -ID:2004007064381 -ID:2100002023812 ______________________________ Dear .mr minister of education dhet and deputy member of dhet .tvet college examination directorat and authority competencies. Governments president I' mr tshingombe tshitadi ;acknowledge student st peace college candidat examination career student follow course in duty of nated in rsa 2019 to 2024 , i 'm appear to your department goverment institution for allegation view no result of statement id candidat engineering n1.,n2, n,3,n4 ,n3 and n diplomat saqa outcom in irregularity final n5.n6 /nqf 6. examination national examination was not delivery in the time external assessments commited irregularities. 1.my motivation and disciplinairy assessment submitted my portofolio on line portal dhet release resultat statement and finalized award diplomat by examination commited irregularityb november invalide subject n3 trade theory electricakbtranscript the result of assessment was note release reson irregularity n3.subject n4 .subject fail druip result february 2022 .directorat assessment trascript material .statement affidavitsubmitted st peace college registrar shalom technical and afric instirut college no result outcom .after 15 days was result scaling n1.n2.n3but statement didint come out not print out by registrations resonement inconveniant. Arbitrary irregularity on february i submitted topics saqa qcto dhet email result of saqa documentation; filing dbe dhet .the commited was under investigation soon to finalyse . 2. I received to dhet committed assessment examinations irregularities the retain , invalide subject 23 february 2022 the time table of n3 subject admnistration exam with those subject trade . electrical trade theory .4 subject november 2023 examination rhe result statement for last examination was not print outcome n1.n2 submited n3 last time table exam only last n4 exam statement print outcome and not time table for n6.,n5 received in examinations november suspension is 11 month for irregularity .follow tvet guideline assessment. 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Saqa accepted only qualifications official examination body country ..external examination based , 26 july 2022. 4.allegation to qcto retain on ; saturday22 january 2022. ; with regard n certificate direction dhet education training (for n4_n6 n diploma or umalusi n3 can not assist with qcto issued Sat ..10 march 203 qxto .certificate@qcto.org.za answer soc please note that the qcto does not issue any of results -lindiwe grace 28 may 2023 inquire to national and assessment college .i have copied our QA unit they will be able to rspond to accorlingly regardc Qcto khuluvhe labour market intelligences lmi esteemed stakeholder 21 aug 2023 was not grante - i receiving Allegation to saqa retain on.10 march 2023 procedure for evaluatiin pro forma invoice .copy id passport.copy final award graduation certificate. Copy of completed transcript mark sheet academic record.proof payment if not meetings requirements can resubmitted again.non compliant; 27 july 2021 application above doe s not meet saqa Final award school diploma degre certificate in 48h . -that my requested letter to the authority minister for my result statement certificat over the date review n diploma 24 month.18 month nated examination to resolve problem after examination irregularities materiel that final result n4 and new re certificate body insurence investigation result center assessment outcome years icass total tvet for my instirut st peace college institu and externsl certificate n1.n3 afric training institut and shalom technical collection print out was not in my application for diploma response from dhet submitted to resolve conflic assessment examination. - your sincerely . Sign :Tshingombe Tshitadi ______________________________ Appeal statement result .award degre diploma certificate n engineering studie ______________________________ tshingombe fiston Mon, Jan 8, 2024 at 11:46 AM To: tshingombe fiston , tshigombekb@gmail.com, maraba.a@dhet.gov.za, "lundt.s@dhet.gov.za" , tena.m@dhet.gv.za, lutuka.m@shet.go.za, president@presidency.gov.za, esther.rammultla@dst.gov.za, modiba.d@dhet.co.za, dmandaha@csir.co.za, callcentre@dhet.gov, careerhelp@dhet.gov.za SUBJECTS TERM1 TERM2 TERM3 TERM4 TOTAL First Additional Language Life Orientation Mathematics or Mathematical Literacy Vocationel subject1 Vocationel subject2 Vocationel subject3 Vocationel subject4 Total number task Business studie // Final icass SUBJECT ASSESSMENT PLAN Subject name Task assessment Assessment tools Topics subject outcom Time mark allocation examiner Question submittd Assessment date Assessemnt date Memo discussion/ moderator mark test Marking memo topics 1hr 50 mark Assignment Marking memo checklist topics 75 mark Internal assessment 100 mark Assignment test Task Time frame Type formal assessment Scope assment Mark allocation / contributed 1 Term1 Formal test /oral Pratical aassement Topic completed / 10%x7,, 20 2 Term2 3 Term3 100 FIRST ADDITIONAL LANGUAGES LANGUAGE: ………………………………………… LEVEL: ……. YEAR: ……………………. LECTURER: ……….. MARKS FOR ICASS TASKS FINAL ICASS MARK ICASS TASKS Test1 Oral1 Functionalwriting Test1 Oral1 Literature:Creative t nternalExamination CASSTOTAL(100 CompetenceCod CompetenceCod N Student id number Student name/surname initial Converted mark weigth% 1-7 100% FIRST ADDITIONAL LANGUAGES LANGUAGE: ………………………………………… LEVEL: ……. YEAR: ……………………. LECTURER: ……….. MARKS FOR ICASS TASKS FINAL ICASS MARK ICASS TASKS Test1 Oral1 Functionalwriting Test1 Oral1 Literature:Creative t nternalExamination CASSTOTAL(100 CompetenceCod CompetenceCod N Student id number Student name/surname initial Converted mark weigth% 1-7 100% YEAR: ……………………. LECTURER: ……….. MARKS FOR ICASS TASKS FINAL ICASS MARK ICASS TASKS Test1 Oral1 Test1 Oral1 nternalExamination CASSTOTAL(100 CompetenceCod CompetenceCod N Student id number Student name/surname initial Converted mark weigth% 1-7 100% vocationel: ………………………………………… LEVEL: ……. YEAR: ……………………. LECTURER: ……….. 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MARKING APPLICATION FOR RE – MARKING DHET / RSA N4: ENGINEERING STUDIES/ NOVEMBER 2021 EXAMINATION NUMBER : 210000203812 1982/11/10 STATEMENT OF RESULTAT INSTRUCTIONAL OFFERING % RESULT 80800074. ELECTROTECHNICS N4 8080164. INDUSTRIAL ELECTRONICS N4 15070434. ENGINEERING SCIENCE N4. . 16030164. MATHEMATIC N4 18 19 35 29 FAIL DRUIP FAIL DRUIP FAIL DRUIP FAIL DRUIP RESULT CODE APPEAR ON REVERSE SIDE 2021/12/01 EXAMINATION OFFICER 5563 DEPARTMENT THE RIGTH TO EFFECT CHANGE TO THIS DOCUMENT IS NECESSAIRES . 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SPONGER / , PANDY, RESULT: ASSESSMENT CENTER IRREGULARIRTY : F FULL P INVALIDE SUBJECT , 23 FEBRUART 2023 , 2021 NOVEMBER 1036 REF: IRREGULARITY DECISSION BASED FINALISED , FAIL ADDED INFORMATION AS SOON IT FINALISED SAQA RESULT EVALUATION OF FOREIGN QUALIFICATION TEAM : FINAL AWARD DEGREE DIPLOMA CERTIFICATE , SUBMITTED SCREEN DATE , 14/11/2019 .. - INTERNATIOAL DEGREE QUALIFICATION RECOMMANDE NOTE , AWARD SAQA MEET REQUIRENT SCHOOL LEAVERS: ST EACE COLLEGE INTERNAL ASSESSMENT : DHET / RSA ADMISSION PERMIT AND EXMINATION TIME TABLE / 501110002, N3 ENGINEERING STUDIE N EXAMINATION NUMBER / 2100002023812 CANDIDATE ID NUMBER : 2100002023812 TSHINGOMBE – TSHITADI / TSHITADI MAKANGU EXAMINATION CENTRE / ICASS TEST , CLASSWORK MMORENDUM , ISAT PRACTICAL TRADE / PANEL ELECTRICAL WIRING -AWARD : CERTIFICATE : CERTIFICATE N0: 31-10-2020 COM 182609001/ CRITERIAT ICASS MARK FINAL 80% CALCULATION : 80%+0,4=32 FINAL 32+21= 53 PASS ICASS MARK 45 % 45%.04+18 EXAM MARK , 29%X0= PASSED 17,4 AND FINAL , 18+17,4 =35 JAN 2023 MARK ADDITIONAL ASSEMENT MAY USED CALCULA , 20/30+0/70=200/100 CALCULATION FINAL ICASS , 19+0,4= MARK FINAL 80% CALCULATION : 80%+0,4=32 FINAL 32+21= 53 PASS ICASS MARK 45 % 45%.04+18 EXAM MARK , 29%X0= PASSED 17,4 AND FINAL , 18+17,4 =35 JAN 2023 MARK ADDITIONAL ASSEMENT MAY USED CALCULA , 20/30+0/70=200/100 CALCULATION FINAL ICASS , 19+0,4= 20+0.4= 29+0,4= 30+0,4= 19% X 0,6=11,4 20% X 0,6=17,7 30 X 0,6=18 TVET YEARS SEMMESTER FINAL / SUBMISSION N4-N5, N6,N3 , N DIPLOMAT N STUDIE SUBMISION CERTIFICATE YEARS CLOSE YEARS BASE// 2022 IRREGULARITY ADDIDTIONAL 11,4+50=66,4% 12,50=66,5% 17,7+50+77,50% 18+50+68,8% BOOK SHALOM TECHNICAL RELEASE RESULTAT PROGRESS MARKING ASSESSMENT , VERIFICATION TIME TABLE: ADM EXAM / CONTINUE ASSESSMENT 2023 IN PROGRESS N5,N6 / RE- RWITEN N3 STATEMENT : ENGINEERING BUSINESS AFRICA TRAINING INSTITUT EXTERNAL ASSESMENT STATEMENT OF RESULTAT N1 INTRUCTION OFFER % RESULT TEST 1/TEST2 80 / CLASS WORK / SUBMISSION TOPICS , PREVIOUSE MEMO LAST PAPPERS LEVEL COMPLETED WEEK 80% WORD / 3000MARKS MODULES WEIGTH SCALE STATEMENT OF RESULTAT N2 REPLACEMENT INSTRUCTION OFFER % RESULT TEST 1/TEST2 80 / CLASS WORK / SUBMISSION TOPICS , PREVIOUSE MEMO LAST PAPPERS LEVEL COMPLETED WEEK 80% WORD / 3000MARKS STATEMENT OF RESULT N 5 FINAL / INSTRUCTION OFFER % RESULT TEST 1/TEST2 80 / CLASS WORK / SUBMISSION TOPICS , PREVIOUSE MEMO LAST PAPPERS LEVEL COMPLETED WEEK 80% WORD / 3000MARKS PRACTICAL PLUMBING STATEMENT OF RESULTAT/ FINAL N6 % RESULT TEST 1/TEST2 80 / CLASS WORK / SUBMISSION TOPICS , PREVIOUSE MEMO LAST PAPPERS LEVEL COMPLETED WEEK 80% WORD / 3000MARKS TOPIC ACHIEVEMNT / RATING ICASS / REMARK FINAL STATEMENT EXTERNAL / SHALOM TECHNICAL EXTERNAL COMPARE STATEMENT OF RESULT STUDIE ENGINEERING N3 STATEMENT OF RESULTAT N4 ACHIEVENT AWARD , CERTIFICATE DIPLOMA AWARD / RELESE ACHEVEMENT CERTIFICATE ,, HOD FILE LECTURE ,, APPLICATIO ,N4,N3, N5,N6, EXPERIMENTAL WORKPLACE , AWARD DIPLOMA CAREER VERIFICATION CAREER JOB JOB SCORE RELEASE COMPARE ,, OUTCOM , SCOPE SAQA RESULT EXPERIMENTAL EVIDENCE LOW BODY INSURANCE OCCUPATION FRAMEWORK QCTO RESULT TRADE RELEASE RESEARCH RESULTAT POE'S RESULT TOPICS ACHIEVEMENT TOPICS PRACTICAL RESULTAT CERTIFICATE : RELEASE RE – CERTIFICATION N4,N5,N6 INSURANCE BODY ,, SAQA QCTO CPD DEVELOPMENT SAQA AWARD MEEETING COUNCIL TRDE , COUNCIL ENGINEERING , EXPERIMENTAL, COUNCIL : REF: CHIEF DIRECTORATE: NATIONAL EXAMINATIONS AND ASSESSMENT Private Bag X110, Pretoria, 0001, South Africa, 123 Francis Baard Street, PRETORIA, 0002. Tel: +27 12 357 3892, Fax: 012 328 6878, http://www.dhet.gov.za Enquiries: Pierre de Villiers Tel.: (012) 357 3966 / 082 697 0982 Email: devilliers.p@dbe.gov.za TO: CAMPUS MANAGERS ACADEMIC HEADS EXAMINATION OFFICERS DEPUTY PRINCIPALS: ACADEMIC PRINCIPALS OF PUBLIC TVET COLLEGES AND PRIVATE COLLEGES SOUTH AFRICAN COLLEGE PRINCIPALS' ORGANISATION (SACPO) REGIONAL DIRECTORS/ MANAGERS UMALU MEMORANDUM TE50 OF 2016 RELEASE OF 201608 RESULTS 1. RELEASE OF 201608 ENGINEERING STUDIES EXAMINATION RESULTS The quality assurance bodies responsible for TVET College qualifications approved the release of the August 2016 examination results for Report 190/1 Engineering Studies. These schedules of results were subsequently released to examination centre The results for the one subject listed below (Table 1.1) were not standardised and published due to low capture rates and will be released later this week once all outstanding marks are received from examination centres. The results for this subject currently reflect as UNDER INVESTIGATION SUBJECT CODE SUBJECT LEVEL RESON N3 ELECTRICAL TRADE THEORY N3 UNDER INVESTIGATION trade-related qualifications design, assessment, and quality assurance. Models are developed based on international best practice, and developments, both in current practice and in terms of the future world of work, are investigated and analyse On Tue, Dec 26, 2023 at 12:25 PM tshingombe fiston wrote: Application Ref :Applications letter number : 2023/1226 ______________________________ ADRESS:PRIVATE BAG X 174 ,PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL:0123235618 ______________________________ ENQUIRY NUMBER: DHET : DOCKET NUMBER :2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME :ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA : 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER:210020223812,2004007064382. -email adress: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com tshingombe fiston ______________________________ Appeal statement result .award degre diploma certificate n engineering studie ______________________________ tshingombe fiston Tue, Mar 12, 2024 at 2:50 PM To: tshingombe fiston , tshigombekb@gmail.com, maraba.a@dhet.gov.za, lundt.s@dhet.gov.za, tena.m@dhet.gv.za, lutuka.m@shet.go.za, "President Hotline(DPME)" , esther.rammultla@dst.gov.za, modiba.d@dhet.co.za, dmandaha@csir.co.za, callcentre@dhet.gov, careerhelp@dhet.gov.za, confirmations@saqa.co.za, verification@qcto.org.za, dfqeas@saqa.co.za, saqainfo@saqa.org.za, verifications@saqa.co.za, sonnika.lund.s@dhet.gov.za On Tue, 27 Feb 2024, 10:14 tshingombe fiston, wrote: On Thu, Feb 15, 2024 at 10:23 AM tshingombe fiston wrote: Application Ref: Applications letter number: 2023/1226 ______________________________ ADRESS: PRIVATE BAG X 174, PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL: 0123235618 ______________________________ ENQUIRY NUMBER: DHET: DOCKET NUMBER: 2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME: ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA: 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER: 210020223812, 2004007064382. -email address: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com ______________________________ APPEAL DECISSION RESULT RELEASE: APPLICATION NUMBER: Saqa: institute foreign .saqa transcription meeting 71638 dry Congo requirements graduate award diploma knife .high certificate no meeting .leave school .expended assessments .exam d teat diploma .certificate professional .certificate informatics mathematic vs. offices ; result outcome primary status registration saqa asset 09121 .saqa institute 30_ 39 no assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat -Qualification title national N diplomat engineering. -nqf level:6 . -date submitted to dhet :1105/2023 -date process. DHET -Timetable /50111002 -N1: engineering studies -ID: 2004007064381 -ID: 2100002023812 ______________________________ Dear .mar minister of education duet and deputy member of duet .vet college examination directorate and authority competencies. Government's president I' mar tshingombe tshitadi ;acknowledge student st peace college candidate examination career student follow course in duty of nated in rsa 2019 to 2024 , i 'm appear to your department goverment institution for allegation view no result of statement id candidat engineering n1.,n2, n,3,n4 ,n3 and n diplomat saqa outcom in irregularity final n5.n6 /nqf 6. Examination national examination was not delivery in the time external assessments commited irregularities. 1.my motivation and disciplinary assessment submitted my portfolio on line portal duet release resultant statement and finalized award diplomat by examination committed irregularity November invalided subject n3 trade theory electricakbtranscript the result of assessment was note release reason irregularity n3.subject n4 .subject fail druip result February 2022 .directorate assessment transcript material .statement affidavit submitted sty peace college registrar shalom technical and agric institute college no result outcome .after 15 days was result scaling n1.n2.n3but statement didn't come out not print out by registrations resentment inconvenient. Arbitrary irregularity on February I submitted topics saqa cot dhet email result of saqa documentation; filing dbe dhet .the committed was under investigation soon to finalize. 2. I received to duet committed assessment examinations irregularities the retain , invalided subject 23 February 2022 the time table of n3 subject administration exam with those subject trade. electrical trade theory .4 subject November 2023 examination rhea result statement for last examination was not print outcome n1.n2 submitted n3 last time table exam only last n4 exam statement print outcome and not time table for n6.,n5 received in examinations November suspension is 11 month for irregularity .follow vet guideline assessment. Exam over the date insurance body frameworks qualification and labor department if could claim no outcome in career portal was outcome granted national fund skill for extra subject topics irregularity written cot practical was not granted scope portal research cot . 3.allegation result statement retain duet .;saqa n diploma n diplomat application for n4.6 diplomat final was no granted n4.level 4 diploma ices years college in my portfolio submitted on line marked exam n5.n6.subject additional assessment information by institution is at ices. Ref outcome saqa result 16 Jan 2023 on line maraschino massage send submission number foreign institute inquiries 9370. Foreign institutions inquiries 6594 Section 29(a) policy criteria saqa knife amended march 2017 institute ...framework nqf foreign award must meet for recognize. Saqa accepted only qualifications official examination body country...external examination based, 26 July 2022. 4. Allegation to qcto retain on; saturday22 January 2022. ; With regard n certificate direction dhet education training (for n4_n6 n diploma or umlauts n3 can not assist with qcto issued Sat ..10 march 203 I .certificate@qcto.org.za answer soc please note that the qcto does not issue any of results -lindiwe grace 28 may 2023 inquire to national and assessment college .i have copied our QA unit they will be able to rspond to accorlingly regardc Qcto khuluvhe labour market intelligences lmi esteemed stakeholder 21 aug 2023 was not grante - i receiving Allegation to saqa retain on.10 march 2023 procedure for evaluatiin pro forma invoice .copy id passport.copy final award graduation certificate. Copy of completed transcript mark sheet academic record.proof payment if not meetings requirements can resubmitted again.non compliant; 27 july 2021 application above doe s not meet saqa Final award school diploma degre certificate in 48h . -that my requested letter to the authority minister for my result statement certificat over the date review n diploma 24 month.18 month nated examination to resolve problem after examination irregularities materiel that final result n4 and new re certificate body insurence investigation result center assessment outcome years icass total tvet for my institute st peace college institu and externsl certificate n1.n3 afric training institute and shalom technical collection print out was not in my application for diploma response from dhet submitted to resolve conflic assessment examination. - Your sincerely. Sign :Tshingombe Tshitadi ______________________________ An.n3 .in the relevant specialization area communication nqf level 4 in language teaching ...theoretical knowl2 and practical skills required and learning of institution offering. To be award the award qualification learners are to choose complete .business studies 0.5 years business studies. .N4 o.5 year's duration 60 cresits ...n5 (0.5 year duration) 60 credit .n6. 0.5 years duration 60. 18 month practical .in casev years duration engineering studies .n4 (0.33 years duration) 40 creditb. N5 (0.33 years duration) 40 credits .N6 (0.33 year duration) 40 credit ..24 momts practical experience. N diploma 360 credit .180 awarded to experiential training business studie ..programme code n diploma engineering studie .electrical engineering. NQF qualification ID: 90674 .national engineering studies electrical engineering. NQF level 6; 360 credit credit . Saqa learning programme . N . tshingombe fiston Wed, Feb 7, 9:29 PM (5 days ago) to tshigombekb, maraba.a, lundt.s, tena.m, lutuka.m, president, esther.rammultla, modiba.d, dmandaha, callcentre, career help, registrarphei, me Appeal .process academics Section -Student Name:tshingombe tshitadi -Qualification : saqa record academic institution name: foreign .st peace -college name: st peace college -Year of graduation:2020 to 2024 :management system information academic year: policy dhet ..policy number: saqa cat yet Policy st peace college quality system manage qms .lms - referral registrar attandance :Record irregularities material transcript and script submission statement and evidence years 2022 ,11 months feb 2023 register roll academics college basic and advance nqf policy criteria ______________________________ 1.Letter record academic and transcript academic : Consenting :asking to provide detail fir reasin course attended topics mark earner apply and refistrar keepinf record .-FROM:TSHINGOMBE TSHITADI TO: THE DHET DEPUTY MINISTER . MEMBERS OF ACADEMIC RECORD SAQA AND COLLEGE RECTORAT INSTITUT SUB : Dear : my name is tshingimbe and i attended event from to in there write to request for my transcript to apply for father adulation i wish to express my sincere gratitude to your education i wish to express my sincere gratitude to your dhet college thing which have helped me in my profession. I wish to take studies at foreign institut saqa and college education advanced field continuing assessment professional institution has requirements a full transcript from my former studies to check my eligibility to studies the course i hope saqa to start my studie on and the dealnje to submit the requested document is kindly send the transcript at your earliest so that i an submit the documents on time i herbed provide my student identif6 number end of birbe you access my file quickly kindlt send the transcrip to my home please t . -in effect of irregularities transcript material februarie 2022 need submission statement dhet full completion and finalise marks out term that honor for me to be part of this excellent institution since mention period feel proud and privileges to informer that due to the high standards of education imported by this institution secure institution workplace soon noining process i would be great ful to you if you colomb sending me the requested do i graduation years . I hereby requested foil transcrip i eas students in journes from i graduate alumn of estemed successful career engineering experience cvs on line student research. -- Section : Ref: to maintaining record of academic achievement dhet .st peace college in saqa in order to maintaining acurate system student record lesson transcript student . -student record: attendance dhet and nated years and saqa years entry national frameworks qualification award degre diplomat graduation. Enroll course in sty peace college. -academics performance record keep track...studdnts progress formal and informal assessment .portofolio Topics system -Authors :tshingombe tshitadi: loyalty Research pepper college system. Management -methodology: description login topics and research topic college 'son lines admit upload information student to view marks exam. -advantages :the software verifications on line topics in trade national examination informal and poi s ices submitted on line framework qualification.nqf submitted information supplementary need to be record earn reward honestly .. Result processing college need to try again and consol inspector information management systems -consol textbooks n1,n6 permit consol fire script audit material exam scan over the time download need to be record registration storage restoration - registrar next stepped record keeping earn reward honestly intellectual value credit challenges loyal compensation anted body frameworks qualification textbook cooking amendment pay information need reward return on line Microsoft database system collection and record process casebook basal book examination topics .reward need amendment R5000 copyright textbook exam pepper exam submitted need to returned explanation .textbook folding reviewers retrieve answering exam pepper need to be recording because students topics framework challenge textbook answering textbook dissertation on line consol result statement. Thank u for sincerely. Weighting of courses Certificate engineering studies / n diploma engineering Course in circular Weighting of courses Industrial electronics n1 Engineering drawing n1 Electrical trade theory n1 Mathematics n1 Industrial electronics n1 Electrical trade theory n1 Mathematics n1 N2 SCALING PLACEMENT Industrial electronics n3 Electronically trade theory n3 Engineering science n3 Electro- technology n3 -Industrial orientation n3 -plant operation theory n3 -electro –technology n3 -electrical trade theory n3 Electrotechnichnics n4 Industrial electronics n4 Enginering science n4 Mathematics n4 Certificate Courses in Curriculum Census day enrolments Credit value of the course FTE student Total Industrial electronics n1 0.33 1 Engineering drawing n1 0.33 1 Electrical trade theory n1 0.33 1 Mathematics n1 0.33 1 Industrial electronics n1 0.33 1 Electrical trade theory n1 0.33 1 Mathematics n1 0.33 1 N2 SCALING PLACEMENT 0.33 1 Industrial electronics n3 0.33 1 Electronical trade theory n3 Appeal statement result .award degre diploma certificate n engineering studie ______________________________ tshingombe fiston Sat, Apr 6, 2024 at 11:02 AM To: tshingombe fiston , tshigombekb@gmail.com, maraba.a@dhet.gov.za, lundt.s@dhet.gov.za, tena.m@dhet.gv.za, lutuka.m@shet.go.za, "President Hotline(DPME)" , esther.rammultla@dst.gov.za, modiba.d@dhet.co.za, dmandaha@csir.co.za, callcentre@dhet.gov, careerhelp@dhet.gov.za, confirmations@saqa.co.za, verification@qcto.org.za, dfqeas@saqa.co.za, saqainfo@saqa.org.za, sonnika.s@dhet.gov.za RE: Appeal statement result .award degre diploma certificate n engineering studie Inbox Lundt, Sonnika Thu, Mar 14, 7:19 PM to me Kindly note that Ms Maraba and I are no longer with the office of the Minister. Kindly contact our call center: CallCentre@dhet.gov.za / 0800 872 222 or visit our website: www.dhet.gov.za Best wishes Mrs Sonnika Lundt University Capacity Development Department of Higher Education and Training 123 Francis Baard Street, Pretoria Central Room 506_012 312 5440 lundt.s@dhet.gov.za Incident INC000025277051 reported by you has been resolved. Request assistance from Dept of Higher Education and Training Inbox itsmprd@sita.co.za Tue, Mar 19, 12:52 PM to me Dear Tshingombe Fiston, We are pleased to inform you that your reported Incident has been resolved. Reference No.: INC000025277051 Summary: Request assistance from Dept of Higher Education and Training Your reported Incident has been resolved with the following resolution: The N3 statement of results for 2100002023812 for the 2023/11 exam was released and sent to SHALOM TECHNICAL COLLEGE on 01/02/2024 waybill number 080057034873 (SkyNet couriers). Candidate does not qualify for a certificate as he did not pass all subjects. For a diploma to be awarded (as per the complaint), a candidate must achieve N4, N5 and N6 certificates and also have the relevant experiential work, then submit the application at the college. This candidate does not qualify for that. Complainant was responded to via an email. Please do not hesitate to contact the Service Desk should there be any further questions or inquiries regarding your Incident. Please quote your assigned Reference Number. Yours sincerely, Service Desk INC000025277051 PHL enquiry Inbox Nhleko, Gugu Tue, Mar 19, 12:39 PM to me Good day The DHET has received the below enquiry Kindly note that according to the records for this profile 2100002023812, the results for 2023/11 were released and sent to SHALOM TECHNICAL COLLEGE on 01/02/2024 waybill number 080057034873 (SkyNet couriers). Candidate does not qualify for an N3 certificate as he did not pass all subjects. For a candidate to be awarded with a diploma (as per the below complaint), they must achieve N4, N5 and N6 certificates plus relevant work experience then then may submit the application at the college. Regards Gugu Nhleko Helpdesk

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Complains about : Service delivery Person / Ministry / Municipality: Department of Higher Education Preferred contact number : 0725298946 Any other contact number : 0725298946 E-mail : tshingombefiston@gmail.com Fax Number : ID number : tircog0000910610 Ref number : ID: 2100002023812 Office where you complained :dhet exam assessment center irregularity and career dhet kheta Street : : 19 Harries St, Marshalltown, Johannesburg, 2107 Building name : markadet house City : Johannesburg Office Contact Number : St. Peace College & Afric Policing Institut Province : Gauteng Date of complaint : 12 february 2022 Names of people not delivering service: st peace college afric institut police , dhet marker chief irrergularitor mr Mngaka , rectorat shalom technical Where did it happen town / site / municipality: in shalom technical college ansd afric training college Type of service : service retaining statement id africa technical college and irregulariy trascript material febrauarie 2022 was suspende n4 examination time table , and marker in progress for n5,n6 afte 18 month appear before the result for n3 2023 november was exam july 2021 shalom technical result retain and dint collected for proof of irregularity was time table in november 2021 februarie , the marker asking additional information for assessment and statement to submitted but shalom and afric didn't have those statement in registrar collecting the irregulariy was attended n5,n6 final examination submission previouse pappers examination mark guideline and comleted n5,n6 test memo for irregularity investigation casebook in irregularity statemnt outcom and certificate diploma for irregularity outcom final beford the result for 2023 november that the complain was also to show the id enrolment from citizen saqa award degre diploma school leaver dr congo time table ref / to completed same subject electrotechnologie , and industriel orientation meeting requiremnt saqa n3 to qualifie for diploma n studie engineeering in saqa n diploma work pratical experimental career from assessment theoretical topics research submitted for irregularity in saqa ,pratical assessment in saqa 21 days 2019 t0 2023 SAQA REGISTRAR STUDENT NUMBER: 210020223812, 2004007064382. CO70040101099, esult outcome primary status registration saqa asset 09121 .saqa institute 30_ 39 no assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat Citizen is requesting about the release of results statement and to award a diploma. Student ID: 2100002023812 Student name.tshingombe Tshitadi College instituts name St peace college Exam :external shalom technical : 899993812 Afric policing instituts Memorandum :2023/0508 See attachment for more information Citizen requests the Presidency to assist them Exhibit career : Ticket #Z1RNQ: Career Choice Inbox 9160256+Z1RNQ@tickets.livechatinc.com Thu, Jan 11, 3:30 PM to me Your ticket has been created. Career Choice tshingombe Thu, 01/11/24 1:29 pm Chat transcript: ---------- Name: tshingombe Contact number: 0725298946 E-mail: tshingombefiston@gmail.com Gender Male Are you a Student ---------- Harriet Magolego (Thu, 1/11/2024, 01:40:55 pm Africa/Johannesburg) Welcome to the Career Development Services LiveChat. How can we help you today? tshingombe (Thu, 1/11/2024, 01:42:05 pm) hi Chat now Powered by 9160256+Z1RNQ@tickets.livechatinc.com Thu, Jan 11, 3:30 PM ## Your ticket is now solved! ## Career Choice Harriet Magolego Thu, 01/11/24 1:30 pm Good day Tshingombe Thank you for contacting the Career Development Servic tshingombe fiston Thu, Jan 11, 4:16 PM Thank you for your assistance. 9160256+Z1RNQ@tickets.livechatinc.com Thu, Jan 11, 4:16 PM to me Ticket reopened Career Choice tshingombe fiston Thu, 01/11/24 2:16 pm Thank you for your assistance. Harriet Magolego Good day Tshingombe Thank you for contacting the Career Development Services (CDS): Helpline. Please note that CDS offers information and advice on career and educational matters. The email is a chat follow-up which was not concluded but acknowledged. We apologise for the late response. Your profile indicates that you are a student. I wanted to make a follow-up to understand how you could be assisted. however, I have shared information regarding subject choice and career choice, Post school institutions and financial assistance. Would appreciate if you could share with me more careers that you would like to know more about or that you would like to pursue, while doing that, please address the follow: The grade your currently doing; Your subject choice and; Your academic performance. Please note that choosing career is an important step which may determine how your life will be like in future. It is also important that you should take time to know yourself better in order to make an informed career choice. The process of making an informed career choice begins with creating your career vision, therefore it is a lifelong journey. There are some important factors you should consider when making a career choice. That is your interests, strengths and abilities, values and personality, just to name a few. It is therefore critical that you have the right information about the career that you are interested in. In addition, you need to think about the subjects you enjoy doing the most and consider your academic performance and achievements in your subjects. You should know what you enjoy doing and what careers appeal to you. Please consider completing an interest questionnaire which will assist or direct you to the specific fields that are more suitable for you: http://ncap.careerhelp.org.za/login?ReturnUrl=%2fquestionnaire Note that you will need to register as a user first and then continue with the exercise. Click on "Not Registered" to register. The following links have more information on careers linking them to specific subjects as well exercises that you can take to assist direct your choices effectively: • NCAP (Careers categorised in career/ subject field fields): http://ncap.careerhelp.org.za/Subject/StartWizard • NCAP: http://ncap.careerhelp.org.za/Subject/Index • NCAP Subjects linked to career fields: http://ncap.careerhelp.org.za/Subject/StartWizard • Pace Career: http://www.pacecareers.com/resources/making%20subject%20choices.pdf • Go Study: https://www.gostudy.net/img/author/326fdda6-55bf-4c1e-9c79-ded669886033/medium/subject-choice-project-for-grade-9.pdf?id=1b5f2681-cc09-4dab-8419-c5532852add2 • CareerPrep: http://careerprep.co.za/subjects/ Make sure that you are aware of all the post-school options available to you and how you can access them: List of universities in South Africa, please check the minimum admission requirements form university prospectus or information booklet (Please check the closing dates as most universities will be closing around September /October): http://www.dhet.gov.za/SiteAssets/New%20site%20Documents/Universities%20in%20South%20Africa1.pdf Please find a list of TVET Colleges and check their courses, I would really encourage you check the link as you will be able to pursue you studies at the College with low results in Mathematics: http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Please check the following websites links for possible funding opportunities: Please note that NSFAS will reopen soon for 2024 academic year. http://www.nsfas.org.za/content/ Other bursaries: https://www.careerhelp.org.za/funding https://www.gostudy.net/bursaries Please find a list of TVET Colleges and check their courses. http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Kind regards HM Magolego Career Development & Open Learning Email: CareerHelp@dhet.gov.za TEL: 086 999 0123 123 Francis Baard Street Private Bag X174 Pretoria 0001 tshingombe Thu, 01/11/24 1:29 pm Chat transcript: ---------- Name: tshingombe Contact number: 0725298946 E-mail: tshingombefiston@gmail.com Gender Male Are you a Student ---------- Harriet Magolego (Thu, 1/11/2024, 01:40:55 pm Africa/Johannesburg) Welcome to the Career Development Services LiveChat. How can we help you today? tshingombe (Thu, 1/11/2024, 01:42:05 pm) hi Chat now Powered by 9160256+Z1RNQ@tickets.livechatinc.com Tue, Jan 16, 9:27 AM to me Please take a moment to rate the customer service you've received. • Good, I'm satisfied • Bad, I'm not satisfied Here's a quick reminder of the case in question: Career Choice tshingombe fiston Thu, 01/11/24 2:16 pm Thank you for your assistance. Harriet Magolego Thu, 01/11/24 1:30 pm Good day Tshingombe Thank you for contacting the Career Development Services (CDS): Helpline. Please note that CDS offers information and advice on career and educational matters. The email is a chat follow-up which was not concluded but acknowledged. We apologise for the late response. Your profile indicates that you are a student. I wanted to make a follow-up to understand how you could be assisted. however, I have shared information regarding subject choice and career choice, Post school institutions and financial assistance. Would appreciate if you could share with me more careers that you would like to know more about or that you would like to pursue, while doing that, please address the follow: The grade your currently doing; Your subject choice and; Your academic performance. Please note that choosing career is an important step which may determine how your life will be like in future. It is also important that you should take time to know yourself better in order to make an informed career choice. The process of making an informed career choice begins with creating your career vision, therefore it is a lifelong journey. There are some important factors you should consider when making a career choice. That is your interests, strengths and abilities, values and personality, just to name a few. It is therefore critical that you have the right information about the career that you are interested in. In addition, you need to think about the subjects you enjoy doing the most and consider your academic performance and achievements in your subjects. You should know what you enjoy doing and what careers appeal to you. Please consider completing an interest questionnaire which will assist or direct you to the specific fields that are more suitable for you: http://ncap.careerhelp.org.za/login?ReturnUrl=%2fquestionnaire Note that you will need to register as a user first and then continue with the exercise. Click on "Not Registered" to register. The following links have more information on careers linking them to specific subjects as well exercises that you can take to assist direct your choices effectively: • NCAP (Careers categorised in career/ subject field fields): http://ncap.careerhelp.org.za/Subject/StartWizard • NCAP: http://ncap.careerhelp.org.za/Subject/Index • NCAP Subjects linked to career fields: http://ncap.careerhelp.org.za/Subject/StartWizard • Pace Career: http://www.pacecareers.com/resources/making%20subject%20choices.pdf • Go Study: https://www.gostudy.net/img/author/326fdda6-55bf-4c1e-9c79-ded669886033/medium/subject-choice-project-for-grade-9.pdf?id=1b5f2681-cc09-4dab-8419-c5532852add2 • CareerPrep: http://careerprep.co.za/subjects/ Make sure that you are aware of all the post-school options available to you and how you can access them: List of universities in South Africa, please check the minimum admission requirements form university prospectus or information booklet (Please check the closing dates as most universities will be closing around September /October): http://www.dhet.gov.za/SiteAssets/New%20site%20Documents/Universities%20in%20South%20Africa1.pdf Please find a list of TVET Colleges and check their courses, I would really encourage you check the link as you will be able to pursue you studies at the College with low results in Mathematics: http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Please check the following websites links for possible funding opportunities: Please note that NSFAS will reopen soon for 2024 academic year. http://www.nsfas.org.za/content/ Other bursaries: https://www.careerhelp.org.za/funding https://www.gostudy.net/bursaries Please find a list of TVET Colleges and check their courses. http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Congratulations, the job offer (99) Artisan-Electronics CT is extended to you! Inbox SARB Talent Acquisition Thu, Feb 8, 3:49 PM to me Hello tshitadi tshingombe, Congratulations, your job application was successful and we are pleased to extend the job offer (99) Artisan-Electronics CT to you. We look forward to you accepting the job offer and joining this team. Respond to Job Offer Sincerely, South African Reserve Bank Recruiting Team tshingombe fiston Thu, Feb 8, 7:05 PM I accept the offer. tshingombe fiston Fri, Feb 9, 11:30 AM On Thu, Feb 8, 2024 at 3:49 PM SARB Talent Acquisition wrote: Hell : Appeal statement result .award degre diploma certificate n engineering studie Inbox Lundt, Sonnika Mar 14, 2024, 7:19 PM to me Kindly note that Ms Maraba and I are no longer with the office of the Minister. Kindly contact our call center: CallCentre@dhet.gov.za / 0800 872 222 or visit our website: www.dhet.gov.za Best wishes Mrs Sonnika Lundt University Capacity Development Department of Higher Education and Training 123 Francis Baard Street, Pretoria Central Room 506_012 312 5440 lundt.s@dhet.gov.za From: tshingombe fiston Sent: Thursday, 14 March 2024 12:51 To: tshingombe fiston ; tshigombekb@gmail.com; maraba.a@dhet.gov.za; Lundt, Sonnika ; tena.m@dhet.gv.za; lutuka.m@shet.go.za; President Hotline(DPME) ; esther.rammultla@dst.gov.za; modiba.d@dhet.co.za; dmandaha@csir.co.za; callcentre@dhet.gov; CareerHelp ; confirmations@saqa.co.za; verification@qcto.org.za; dfqeas@saqa.co.za; saqainfo@saqa.org.za; sonnika.s@dhet.gov.za Subject: Re: Appeal statement result .award degre diploma certificate n engineering studie Some people who received this message don't often get email from tshingombefiston@gmail.com. Learn why this is important Support Thank you. Your question was successfully submitted to Microsoft Support. Please keep in mind: microsoftsupport.com and microsoft.com are both valid email domains used for communications related to your support request. Incident title: engineering data portal Support request number: 2403110060003192 Severity rating: C Expect response within: 8 Contact preference: Email Name: Tshingombe Tshitadi Email address: tshingombefiston@gmail.com Contact numbers: 0725298946 Thank you, Microsoft Support Additional Information Product: Developer, Student and Startup Programs/Azure for Education/Licensing Information This message from Microsoft is an important part of a program, service, or product that you or your company purchased or participates in. Microsoft respects your privacy. Please read our Privacy Statement. One Microsoft Way, Redmond, WA 98052 USA On Tue, Mar 12, 2024 at 2:52 PM tshingombe fiston wrote: Turn on more accessible mode Skip to main content Turn off Animations Together Moving Post-School Education and Training Forward • Home • About Us o Minister o Deputy Minister o Director-General o Office of the CFO o Corporate Services o Planning, Policy & Strategy • Universities • Vocational Education • Community Education • SETAs • Skills DevelopmentCurrently selected • Media Room • Resources • Contact Us Isita back log project : Reference ; Certificate backlog: SITA, DHET, Umalusi; with Deputy Minister Higher Education, Science and Innovation 18 February 2020 Chairperson: Mr M Mapulane (ANC) Share this page: Meeting Summary DHET explained that certification backlog is defined as all eligible candidates who met the certification requirements but were not yet issued with certificates within three months from results approved by Umalusi. It reported to the Committee on: • Progress and status of the certification backlog statistics • Key obstacles to eliminating the certification backlogs • Certification backlog Roll out Plan aimed at addressing the obstacles • Update on progress of the new Integrated Exams IT System (IEITS) • Challenges experienced in the development and deployment of the IEITS DHET updated the Members on the Integrated Examinations Information Technology System (IEITS) that the DHET has been working on with a private service provider. Currently, system requirements and specifications for NC(V) L2 and NATED N4-N6 examination process have been documented and tested with the user community and Umalusi. The focus is now on the finalisation of the interfaces with key stakeholders such as Umalusi, SAQA, SITA printing bureau, Department of Home Affairs, Department of Labour and other departments. The deployment of the new solution was planned to be implemented in a staggered approach per qualification over four months to ensure business continuity. It is envisaged that the deployment will now commence in August 2020. It has been moved from June to August due to comprehensive quality gates for Functional Acceptance Testing (FAT). SITA informed the Committee that backlog reduction will be ramped up in the next few weeks. Besides the technology, SITA will appoint a dedicated programme manager with focused programme resources that will be cross utilised and rolled over to work on activities where quicker reduction benefits can be achieved. There are dedicated DHET and SITA officials that will be allocated to the Backlog Day Zero programme. There will also be swift dataset turnaround times by all stakeholders. SITA projected that there will be about 80% reduction of the backlog by 30 June 2020. Looking at Phase One, this target would be achieved but it will certainly be complex. SITA required steady collaboration between DHET and Umalusi to make this possible and each stakeholder has been assigned its role in the business model. Umalusi reported that it was at the end of the value chain amongst the stakeholders and therefore not responsible for the backlog. Its mandate is solely providing quality assurance and certification of datasets submitted by DHET. If the datasets submitted were correct, its turnaround times would be reduced significantly, otherwise the datasets are sent back for the colleges to correct. Members asked how long the DHET has been using the 12 examination cycles and if it was possible for this to be reviewed; who exactly was responsible for the backlog; outreach campaigns on the certification process undertaken; why the CSIR was not appointed for the development of the IEITS; if SITA had an innovation partnership with CSIR; Umalusi turnaround times for consolidation of datasets; reasons for the seeming increase in backlog statistics; colleges failing to provide the data for certification; challenges in the legacy IT system; and if exam paper leakage had been resolved. Members wanted to know who was responsible for the development of the IEITS; if DHET had capacity to deal with the data from Community Education and Training (CET) and TVET colleges for migration to SITA and Umalusi; why SITA was placed under administration; if SITA had the capacity to handle the Day Zero commitment and exam cycle turnaround times; if consequence management has been implemented for those responsible for the backlog. Members were not happy that the stakeholders had taken so long to solve the certification backlog and asked why the service provider contracted to develop the new system had taken five years. However, there was satisfaction regarding the tangible commitments made and the timeline put in place to reduce the backlog. Meeting report The Chairperson noted that the Committee had visited the State Information Technology Agency (SITA) two weeks previously to get a sense of the certification backlog. The Committee and SITA agreed that answers would be provided today, particularly when Day Zero will come for the printing of certificates. The newly appointed SITA Administrator is also present and that is appreciated. SITA had been placed under administration since the start of the year. Certificate Status: TVET, CET, Private Colleges: DHET briefing Ms Violet Tshetlo, DHET Chief Director: National Examinations and Assessment (TVET, CET and Private Colleges), explained that certification backlog is defined as all eligible candidates who met the certification requirements but were not yet issued with certificates within three months from results approved by Umalusi. Thus anything after March constitutes a backlog for exams written in November/December. The Department runs 12 examinations cycles in an academic year. November and December are peak months for the certification process. She reported to the Committee on: • Progress and status of the certification backlog statistics • Key obstacles to eliminating the certification backlogs • Certification backlog Roll out Plan aimed at addressing the obstacles • Update on progress of the new Integrated Exams IT System (IEITS) • Challenges experienced in the development and deployment of the IEITS. The statistics fluctuate due to the following reasons: - SITA is busy refining the scripts and system certification backlog. - Instability of the examination information system to process the eligible candidates for certification. - 2019 August exam cycle outstanding certificates have been included in the backlog totals as they now meet the certification backlog's criteria - Candidates who had outstanding raw marks in the previous report to Committee which have since been summated by TVET colleges who are now eligible for certification are included in the totals - Candidates who had irregularities in the previous report and have since been cleared by the irregularity committee and now eligible for certification are included in the totals DHET spoke about the new exam system, the Integrated Examinations Information Technology System (IEITS) that it has been working on with a private service provider. Currently, system requirements and specifications for NC(V) L2 and NATED N4-N6 examination process have been documented and tested with the user community and Umalusi. The focus is now on finalisation of the interfaces with key stakeholders such as Umalusi, SAQA, SITA, Print Bureau, Department of Home Affairs, Department of Labour and other departments. The deployment of the new solution is planned to be implemented in a staggered approach per qualification over four months to ensure business continuity. It is envisaged that deployment will now commence in August 2020. It has been moved from June to August due to comprehensive quality gates for Functional Acceptance Testing (FAT). SITA commitment to Backlog Day Zero and its role in the New Exam System Mr Vernon John, Head of Department: Administration – Acting at SITA, reported that the pace of reduction will be ramped up in the next few weeks. It will look much better due to the revised approach that has been adopted. SITA's approach included a multi-face approach with phase one looking at data analysis alignment. The phase 2 focus will be more on deep data analysis and cleansing, using a more modern technology. This is the work that will be done outside the historical system. Besides the technology, SITA will appoint a dedicated programme manager with focused programme resources that will be crossed utilised and rolled over to work on activities where quicker reduction benefits can be achieved. He noted that not everything will be resolved by the system and records that cannot be resolved by the system must be resolved through business solutions. The first prize will be Backlog Day Zero is achieved before the new system is implemented. There are dedicated DHET and SITA officials that will be allocated to the Backlog Day Zero programme. There will also be swift dataset turnaround time by all stakeholders and for resolving candidate records that have not been approved by Umalusi. [See slide 7 for a target timeline diagram on Backlog Day Zero] SITA projected that there will be about 80% reduction of the backlog by 30 June 2020. Looking at Phase One, this is going to be achieved but it will certainly be complex. SITA requires steady collaboration between DHET and Umalusi to make this possible and each stakeholder has been assigned its role on the business model (see slide 12 for DHET, SITA and Umalusi responsibilities). The role of SITA in the new system includes: - Providing advice and information on the current exam system to DHET service provider - Extracting data from current exam system and make it available to DHET service provider to port it to the new exam system - Hosting new exam system on the SITA cloud infrastructure, and - Change management and training services. SITA will not be rendering services such as system maintenance and enhancement services and functional application support services. However, SITA will ensure that there is proper governance at the ground level. SITA will report on a monthly basis to provide updates on the reduction of the backlog certification as Day Zero is looming. In conclusion, Mr John said that SITA executives are committed to reducing the backlog in collaboration with DHET and Umalusi. The Chairperson appreciated that they were now getting a sense of the commitments and Day Zero has now been announced and the Committee will be monitoring the status. My Luvuyo Keyise, SITA Executive Caretaker and Accountability Authority, added that there are now 33 dedicated technical resources to get the job done. There is a new software solution which is basically an easier database to get the work done for DHET to stop talking about the legacy system. The data from the legacy system will now be migrated to the new database to clear the backlog. The commitment is that at least minimum two weeks before going live with each module, the backlog should have been cleared. This is because going live on the new system with a backlog will mess it up. The commitment is minimum two weeks but it could be a month or two months earlier. That is the monthly reporting that will be provided through the Department. The additional technical resources and the new database will make a big difference. Umalusi on certification Prof John Volmink, Umalusi Council Chairperson, noted that there had been some improvements in the past year, particularly in the quality of the question papers as well as the improved preparedness of the markers. This led to a better engagement during the marking guideline discussion. On the certification mandate, Umalusi issues certificates to all deserving candidates. To this end each certificate must be issued with correct information. The grace period is allowed after the results have been released and during that period a candidate can enquire on their marks and re-checking of the scripts can take place and consolidation done to ensure that the correct marks are captured. It is after this process that certification process takes place. In conclusion, Umalusi has entered into a new service agreement with the Government Printing Works to provide Umalusi with certificate background paper for the period up to 2021. So far, Umalusi has received 500 000 certificate background papers for and it is expecting another 500 000 at the end of February. The order for 2021 has already been submitted. There are some challenges with some private colleges that have not been able to pay Umalusi for the certificates. These private colleges are not part of the backlog statistics. Individual candidates have an opportunity to pay Umalusi directly to receive their certificate. To resolve this problem, the college registration fees should include the certification fee to ensure students are not disadvantaged by the college being in arrears. On the certificate backlog, Dr Eva Sujee, Umalusi Senior Manager: Qualifications, Certification and Curriculum, reported that Umalusi processes datasets when they are received and so there is usually no backlog on datasets received. Dr Sujee stated that Umalusi must protect and ensure the integrity of the qualifications on the National Qualifications Framework (NQF). Stringent quality assurance measures are in place to ensure the quality of data. Umalusi will continue to process and quality assure all requests for certification with due diligence. Umalusi is committed to support DHET and SITA in solving the problems preventing the certification of candidates. The Chairperson noted that the situation is now much better than when the Committee visited the SITA offices two weeks ago. He felt that the Committee was now getting clear answers on when Day Zero will come to fruition and how that process will be achieved. He thanked the SITA Administrator for the work that has been done so far. He would like DHET to give assurance that come March and August 2021 the system will be deployed. He was worried that the system has been under development for a long time. It cannot take five years to develop a system that is bespoke for the certification backlog. He did not understand why it was delayed so much. The Committee had scrutinised the Legacy Report of the previous Portfolio Committee. That committee was also concerned about this matter. He sought a firm commitment from the Department and advised that the service provider should be made aware of this so that there are no delays from the service providers' side. Discussion Ms J Mananiso (ANC) asked how long DHET has been using the 12 examination cycles and if it was possible for this to be reviewed. It has been identified as leading to the backlog. On slide 6, SITA has assisted in addressing the backlog challenges but there is misalignment in the presentation about who exactly is responsible for what. On slide 7, it seems DHET is good at identifying problems but it moves at a very slow pace to resolve the problems. On slide 8, memos have been issued to colleges but it is unclear how the backlog will be dealt with at college level. There is a lack of outreach programmes and marketing to spread the word that certificates are available when dealing with the backlog. She asked if DHET had approached the CSIR when procuring the IT system. She asked if there are any partnerships with CSIR insofar as innovation. To Umalusi, she was concerned about the turnaround time for the consolidation of marks and asked about the turnaround time. Mr P Keetse (EFF) said a disruption is when a learner or student fails to get their certificate for 25 years. There are new interventions that have been commanded but what often happens is that the officials coming to Parliament are not the same officials that are on the ground. Members should not be undermined in terms of knowing what actually happens on the ground. He questioned the capacity and its effectiveness to reduce the backlog. Based on the statistics, it seems that it has increased instead of decreasing. This is clear from the statistics provided. Members were informed that has the capacity to print one million certificates in a day provided that DHET has provided the data. If that was the case, he did not believe that the backlog would have been a problem if the officials were being honest. He asked which colleges were not providing the data required by DHET so certificates can be printed. On the legacy system, he asked if the problems with the system were systemic and how it is affecting the backlog. Umalusi has come to the Committee before and submitted there was leaking of exam papers in TVET colleges. Mr Keetse believed this problem is still on-going. He asked to what extent paper leakages have been resolved, if it has been resolved? Lastly, there should be a thorough diagnosis of where the problem really is. From the presentations, there is no accountability and clarity on from where exactly the problem comes. Officials were being 'wishy-washy' about the truth. Mr B Nodada (DA) suggested that the Committee should invite Resolve IT to ascertain the delays in the implementation of the system. There are TVET colleges that have complained at ground level about the IT systems that they use to capture data. We speak of the Fourth Industrial Revolution but yet government departments cannot get the basics right such as system migration of data from one stakeholder to the other. Entities should not give the picture they think the Committee wants to see. The Committee needs to be told what the real problems are so that the next time the entities come, the Committee is able to scrutinise them based on the real problems previously presented and if solutions have resolve those identified problems. He asked about who is responsible for the examinations IT system. Does DHET have the internal capacity to deal with the certifications that come from CET and TVET colleges for processing before going to SITA and Umalusi? He asked Umalusi what the backlog is to consolidate the certification based on the records that it keeps since 1992. The same question applied to SITA. He wanted to know why SITA was under administration and if there is capacity in ICT processing, primarily human capacity, to handle the four examinations cycle within the three months that had been indicated. Lastly, what consequence management from all the stakeholders (DHET, Umalusi and SITA) has been implemented as far as where we are with the backlog? DHET Response Ms Aruna Singh, DHET Acting Deputy Director-General: Technical and Vocational Education and Training (TVET), said that the cycle has been in operation for a long time, as long as the qualification has been around. The only new cycle or qualification is the National Certificate Vocational. DHET has managed this over a long period of time. On the communication and notification about certificates becoming available, this information is publicised where the interventions affect particular stakeholders. For example, DHET would publicise that students should go to the examination centres to get their certificates as opposed to the college head office, because the process requires you to go to the exam centre. The reason being is that doing this through colleges has borne a big gap, in some instances. Due to the lack of communication by colleges, DHET has been informed that some certificates have been at the exam centres for up to six months. Therefore, it is critical that the communication channels amongst the stakeholders are strengthened because it ends up affecting the students. On the IT system procurement, even if the CSIR wanted to come on board it would have to do so through the bidding process due to the magnitude of the project and its cost. It went out on an open tender process and the CSIR was also eligible to bid. In the November 2019 examination, there were no exam paper leakages and this was publicised. As for sharing the blame, it is important to note that this process does require everybody to work together. However, between DHET and SITA, we can accept portions of the blame. Even if one segment of the process works perfectly, you would not get a certificate until the entire value chain had no loopholes. Ms Tshetlo replied that DHET does have human capacity and has a dedicated team that will run with the qualification and they deal with the regions. That capacity is adequate for the current examinations and the current qualifications. However, that may not be the case in the future if more qualifications and examinations are added without adjusting the available capacity to cater for that. As for CETs, the General Education and Training Certificate (GETC) qualification is run on an agency basis at the provinces and there is support from SITA. It is a collaborative effort between DHET and the SITA. The ICT system for DHET was supported by SITA and it was based on the SITA main frame. It is run from SITA. On the DHET procurement of the IT system, it was done through an open tender assisted by SITA. The service provider that was sourced came through that process. SITA Response Mr Keyise explained the increased certification backlog statistics on slide 6 of the DHET presentation, particularly on the National Accredited Technical Education Diploma (NATED): Engineering Studies. There was a 1 858 increase in the backlog. However, the statistics do not show within the four month difference when the date was extracted, how many of the new data was received and how many was reduced. The reduction, however, was not shown. As for partnering with CSIR, both SITA and CSIR will soon come to the Committee and brief it on some of the innovative initiatives that the two are planning to partner in. CSIR has research capacity and SITA will report to the Committee on the research work planned ahead. It is indeed true that the systems in DHET, TVET colleges, SITA and Umalusi do not really talk to each other. There is no simpler integration of the government systems. The business rules have not been cleaned yet in terms of making that possible; it is a legacy problem of government. Old systems are used but the business rules have not been changed to make life easier and we are now reactive in solving the challenge. It is not being solved holistically to ensure that once it is fixed from a departmental level, it trickles down to the TVET college level. We are now going to move data from a legacy system into a new system that fits with the technology advances of today. This means that you can process the analysis of that data quicker and it can be done with minimal resources. Broadly the partnership with CSIR speaks to applied research on 4IR in simple terms. We want to partner and see how we can develop a localised ICT research. SITA will also be working with CSIR to build a cyber security academy and ensuring that there are internal skills based in government to refrain from going to the private sector all the time. On Resolve IT, SITA will also be analyzing why it took so long for the service provider to develop the system. SITA is not responsible and it is not playing any role in the implementation of that system. The system implementation is between DHET and Resolve IT. SITA's job is to ensure that the data is cleaned and managed and moved into that system. SITA will avail itself in assisting to monitor the new system implementation in addition to the 33 technical staff that SITA will be utilising. There is no contractual relationship at this point. On SITA's capacity to print a million documents a day, the challenge is not on the printing side but receiving the data or results from the TVET colleges. SITA has given Umalusi a five-working-days turnaround time so that it can move ahead with the process. Mr Keyise replied that he was not the right person to respond to why SITA was placed under administration. He was appointed after the fact but he would inform the Minister that the Committee had asked why the Agency was placed under administration. On consequence management at SITA, this will be looked into but not for the implementation of the new system because SITA is not responsible for that. Umalusi Response Dr Mafu Rakometsi, Umalusi Chief Executive Officer, said that advocacy is something that is continuous at the organisation. He assured Members that he runs road shows throughout the country as well as career exhibitions. The Council receives a report on this matter of how Umalusi executes its advocacy campaign or mandate. On the reduction of the turnaround times, the challenge is always about errors contained in the data submitted to Umalusi. If the data could be correct, the turnaround times would be significantly reduced. When it is not correct, Umalusi sends it back with reasons why the certification could not proceed. The leakage of question papers is mainly an issue that ought to be dealt with by DHET not Umalusi. Umalusi is not the custodian of the question papers and it provides only quality assurance. Also Umalusi cannot verify a student unless the correct data has been submitted. Umalusi verifies the integrity of the data submitted for certification and it is at the end of the value chain of the certification process. Umalusi relies on the quality of data that is submitted by the DHET and SITA. The organisation does not participate in the Department's operations or implementation of the system. Its responsibility is to certify the data submitted by DHET; therefore, it cannot make confessions about matters it is not responsible for. Deputy Minister Response Mr Buti Manamela, Deputy Minister of Higher Education and Training, said that addressing the certificate backlog is at the top of the agenda. DHET is always inundated about the delays in issuing the certificates. Secondly, DHET handles a number of examinations per year, as opposed to the Department of Basic Education which handles only one examination. So the point around Day Zero means that we can only address the backlog we have since the 1990s. However, there are challenges were people think they qualified and demand to be certificated. This is encompassed by all the other challenges. Continual reports will be furnished to the Committee based on the set targets as we approach Day Zero. The Chairperson said that he was happy with the Day Zero commitments. The Committee will hold DHET accountable for these commitments. He would have liked to see DHET making similar commitments as SITA had. The TVET and Community Education and Training (CET) colleges are the most neglected in the Post-School Education and Training (PSET) sector. The universities seem to be the top priority. Engineering electrical power ka Primary navigation Homepage 1 2 Profile • Kananga5 • Activity • Groups • Contributed projects • Personal projects • Starred projects • Snippets • Followers • Following 1. Kananga5 Kananga5 @Kananga5 Activity View all JunJulAugSepOctNovDecJanFebMarAprMayJunMWF Issues, merge requests, pushes, and comments. 1 day ago opened merge request !1 "Draft: Update .gitlab-ci.yml..." at Kananga5 / engineering tshingombe data base 1 day ago pushed new branch mainj at Kananga5 / engineering tshingombe data base 1 day ago pushed to branch main at Kananga5 / engineering tshingombe data base • 03e26dba · https://gitlab.com/Kananga5/engineering-tshingombe-data-base/-/rele... 1 day ago opened issue #2 "enginering lettr experimental theory practical" at Kananga5 / engineering tshingombe data base 1 month ago closed incident #1 "engineering" at Kananga5 / engineering tshingombe data base 1 month ago commented on issue #1 "engineering" at Kananga5 / engineering tshingombe data base tshingombe fiston 1 month ago opened incident #1 "engineering" at Kananga5 / engineering tshingombe data base 1 month ago opened milestone %engineering in Kananga5 / engineering tshingombe data base 1 month ago pushed to branch main at Kananga5 / engineering tshingombe data base • 1a4e4cc3 · Update .gitlab-ci.yml file 1 month ago pushed to branch main at Kananga5 / engineering tshingombe data base • 339781ea · Add LICENSE235955 1 month ago pushed new branch main at Kananga5 / engineering tshingombe data base 1 month ago created project Kananga5 / engineering tshingombe data base Personal projects View all E engineering tshingombe data base 0 Updated 1 day ago Info Member since May 09, 2024 tshingombe fiston ________________________________ Appeal statement result .award degre diploma certificate n engineering studie ________________________________ tshingombe fiston Mon, Feb 12, 2024 at 11:03 AM To: tshingombe fiston , tshigombekb@gmail.com, maraba.a@dhet.gov.za, "lundt.s@dhet.gov.za" , tena.m@dhet.gv.za, lutuka.m@shet.go.za, president@presidency.gov.za, esther.rammultla@dst.gov.za, modiba.d@dhet.co.za, dmandaha@csir.co.za, callcentre@dhet.gov, careerhelp@dhet.gov.za Application Ref :Applications letter number : 2023/1226 ________________________________ ADRESS:PRIVATE BAG X 174 ,PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL:0123235618 ________________________________ ENQUIRY NUMBER: DHET : DOCKET NUMBER :2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME :ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA : 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER:210020223812,2004007064382. -email adress: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com ________________________________ APPEAL DECISSION RESULT RELEASE: APPLICATION NUMBER: Saqa: institut foreign .saqa transcription meeting 71638 dr congo requirements grasuate award diploma nqf .high certificate no meeting .leave school .expended assessments .exam d etat diploma .certificate professionek .certificate informatics mathematicsvoffics ; result outcom primaryb status registration saqa asset 09121 .saqa institut 30_ 39 nc assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat -Qualification title national N diplomat engineering. -nqf level:6 . -date submitted to dhet :1105/2023 -date process . DHET -Timebtable /50111002 -N1:engineering studie -ID:2004007064381 -ID:2100002023812 ________________________________ Dear .mr minister of education dhet and deputy member of dhet .tvet college examination directorat and authority competencies. 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MEMBERS OF ACADEMIC RECORD SAQA AND COLLEGE RECTORAT INSTITUT SUB : Dear : my name is tshingimbe and i attended event from to in there rwite to request for my transcript to apply for futher aduation i wish to express my sincer gratitude to your education i wish to express my sincer gratitude to your dhet college thing which have helped me in my profession. 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The declaration must be signed by both parties and dated. A sample copy of the declaration signed by students must be attached. Copies signed by students will be requested from the institution if and when the need arises listed below. Fill in this form and submit it with your annual report. REQUIRED INFORMATION SUBMITTED YES / NO INSTITUTION' S COMMENTS FOR OFFICE USE ONLY Form APX-03: Annual Report Form Annexure A: Articles of Association as issued by the Companies and Intellectual Property Commission (CIPC) Annexure B1: The disclosure certificate as issued by the CIPC for Directors who have resigned Annexure B2: The disclosure certificate as issued by the CIPC for Directors who have been appointed Annexure C: The letter from the Chairperson of the Board Annexure D: Registration certificate as a Private College issued by the Department. Annexure E: Auditor's report on student data Annexure F: Graduation Booklets Annexure G: Auditor's report on programmes Annexure H: SAQA report on programmes Annexure I1: Termination of agreement with other institutions Annexure I2: Entering into a new agreement Annexure I3: Amendments to existing agreements Annexure J: Compliance with the requirements of the HEQC Annexure K: Compliance with the regulations relating to the health and safety of persons37 REQUIRED INFORMATION SUBMITTED YES / NO INSTITUTION' S COMMENTS FOR OFFICE USE ONLY Annexure L: Evidence on non-discrimination on the basis of race Annexure M: Proof of maintenance of financial surety or guarantee Annexure N: Audited annual financial statements Annexure O: Record of academic achievement Annexure P: Issuance of transcripts of academic records Annexure Q: Issuance of certificates Annexure R: The National Learner's Records Database (NLRD) Annexure S: Sample copy of an enrolment and application form Annexure T: Institutional prospectus, calendar and brochure Annexure U: Official documents, marketing and advertising material Annexure V: Register of students' complains and grievances Annexure W: Evidence in respect of the continued fulfilment of the conditions of registration Annexure X: Maintenance of the risk analysis and management strategy Annexure Y: Tax Clearance Certificate Annexure Z: Premises not listed on re On Fri, Feb 9, 2024 at 11:22 AM tshingombe fiston wrote: Welcome to Learner Profiler for Central Johannesburg TVET College Inbox Learner Profiler Jan 10, 2024, 7:41 PM to me Dear Tshingombe Tshitadi, Welcome to Learner Profiler for Central Johannesburg TVET College. Thank you for registering. To use the system login here with the details given during your registration. Access URL: https://learnerprofiler.com/ Client Code: cjc18stl Email/Username: tshingombefiston@gmail.com In case of forgetting the password it can be recovered by going here. Have you applied for a government bursary? For NSFAS application, please click here. PLEASE NOTE THAT THIS IS AN AUTOMATED SYSTEM AND YOU SHOULD NOT WRITE TO THIS EMAIL ADDRESS. IF YOU HAVE A QUESTION, PLEASE CONTACT YOUR INSTITUTION SUPPORT TEAM. Thanks, Learner Profiler 11 Mail Delivery Subsystem Jan 14, 2024, 2:19 PM Message not delivered There was a problem delivering your message to modiba.d@dhet.co.za. See the technical details below. LEARN MORE The response was: The reci Mabasa, Thembani Jan 19, 2024, 10:03 AM to me Good day We received your placement test results from the Central Johannesburg TVET College system. The test recommends that you reconsider your qualification choices and look at short skills programmes. TVET Colleges offers skills programmes that you can consider as alternative qualification to gain skills. The skills can help you gain employment or to be self employed. Please ask at the college about their skills programmes and apply for admission. Best Regards Mabasa T DHET Career Development Services ________________________________ From: tshingombe fiston Sent: Thursday, January 11, 2024 12:24 PM To: Learner Profiler ; info@nsfas.org.za ; modiba.d@dhet.co.za ; callcentre@dhet.gov ; CareerHelp Subject: Re: Welcome to Learner Profiler for Central Johannesburg TVET College You don't often get email from tshingombefiston@gmail.com. Learn why this is important <a href="https://lear ... Ticket #Z1RNQ: Career Choice Inbox 9160256+Z1RNQ@tickets.livechatinc.com Thu, Jan 11, 3:30 PM to me Your ticket has been created. Career Choice tshingombe Thu, 01/11/24 1:29 pm Chat transcript: ---------- Name: tshingombe Contact number: 0725298946 E-mail: tshingombefiston@gmail.com Gender Male Are you a Student ---------- Harriet Magolego (Thu, 1/11/2024, 01:40:55 pm Africa/Johannesburg) Welcome to the Career Development Services LiveChat. How can we help you today? tshingombe (Thu, 1/11/2024, 01:42:05 pm) hi Chat now Powered by 9160256+Z1RNQ@tickets.livechatinc.com Thu, Jan 11, 3:30 PM to me Your ticket is now solved! Career Choice Harriet Magolego Thu, 01/11/24 1:30 pm Good day Tshingombe Thank you for contacting the Career Development Services (CDS): Helpline. Please note that CDS offers information and advice on career and educational matters. The email is a chat follow-up which was not concluded but acknowledged. We apologise for the late response. Your profile indicates that you are a student. I wanted to make a follow-up to understand how you could be assisted. however, I have shared information regarding subject choice and career choice, Post school institutions and financial assistance. Would appreciate if you could share with me more careers that you would like to know more about or that you would like to pursue, while doing that, please address the follow: The grade your currently doing; Your subject choice and; Your academic performance. Please note that choosing career is an important step which may determine how your life will be like in future. It is also important that you should take time to know yourself better in order to make an informed career choice. The process of making an informed career choice begins with creating your career vision, therefore it is a lifelong journey. There are some important factors you should consider when making a career choice. That is your interests, strengths and abilities, values and personality, just to name a few. It is therefore critical that you have the right information about the career that you are interested in. In addition, you need to think about the subjects you enjoy doing the most and consider your academic performance and achievements in your subjects. You should know what you enjoy doing and what careers appeal to you. Please consider completing an interest questionnaire which will assist or direct you to the specific fields that are more suitable for you: http://ncap.careerhelp.org.za/login?ReturnUrl=%2fquestionnaire Note that you will need to register as a user first and then continue with the exercise. Click on "Not Registered" to register. The following links have more information on careers linking them to specific subjects as well exercises that you can take to assist direct your choices effectively: • NCAP (Careers categorised in career/ subject field fields): http://ncap.careerhelp.org.za/Subject/StartWizard • NCAP: http://ncap.careerhelp.org.za/Subject/Index • NCAP Subjects linked to career fields: http://ncap.careerhelp.org.za/Subject/StartWizard • Pace Career: http://www.pacecareers.com/resources/making%20subject%20choices.pdf • Go Study: https://www.gostudy.net/img/author/326fdda6-55bf-4c1e-9c79-ded669886033/medium/subject-choice-project-for-grade-9.pdf?id=1b5f2681-cc09-4dab-8419-c5532852add2 • CareerPrep: http://careerprep.co.za/subjects/ Make sure that you are aware of all the post-school options available to you and how you can access them: List of universities in South Africa, please check the minimum admission requirements form university prospectus or information booklet (Please check the closing dates as most universities will be closing around September /October): http://www.dhet.gov.za/SiteAssets/New%20site%20Documents/Universities%20in%20South%20Africa1.pdf Please find a list of TVET Colleges and check their courses, I would really encourage you check the link as you will be able to pursue you studies at the College with low results in Mathematics: http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Please check the following websites links for possible funding opportunities: Please note that NSFAS will reopen soon for 2024 academic year. http://www.nsfas.org.za/content/ Other bursaries: https://www.careerhelp.org.za/funding https://www.gostudy.net/bursaries Please find a list of TVET Colleges and check their courses. http://www.dhet.gov.za/SitePages/Inst_TVET1.aspx Kind regards HM Magolego Career Development & Open Learning Email: CareerHelp@dhet.gov.za TEL: 086 999 0123 123 Francis Baard Street Private Bag X174 Pretoria 0001 tshingombe Thu, 01/11/24 1:29 pm Chat transcript: ---------- Name: tshingombe Contact number: 0725298946 E-mail: tshingombefiston@gmail.com Gender Male Are you a Student ---------- Harriet Magolego (Thu, 1/11/2024, 01:40:55 pm Africa/Johannesburg) Welcome to the Career Development Services LiveChat. How can we help you today? tshingombe (Thu, 1/11/2024, 01:42:05 pm) On Fri, Feb 9, 2024 at 10:36 AM tshingombe fiston wrote: On Tue, Dec 26, 2023 at 12:25 PM tshingombe fiston wrote: Application Ref :Applications letter number : 2023/1226 ________________________________ ADRESS:PRIVATE BAG X 174 ,PRETORIA 0001 123 FRANCIS BAARD STREET PRETORIA TEL:0123235618 ________________________________ ENQUIRY NUMBER: DHET : DOCKET NUMBER :2023/1226 INFORMATION MANAGEMENT SYSTEM - INSTITUT COLLEGE NAME :ST PEACE COLLEGE -ID: NUMBER: TIRC0G000910610 -REGISTRATION NUMBER: STUDENT -CO70040101099 -SARS VAT NUMBER: 923228238 -MERSETA : 17_QA/ACC/1311/17 -SAQA REGISTRAR STUDENT NUMBER:210020223812,2004007064382. -email adress: tshingombekb@gmail.com -Alternate email address: tshingombefiston@gmail.com ________________________________ APPEAL DECISSION RESULT RELEASE: APPLICATION NUMBER: Saqa: institut foreign .saqa transcription meeting 71638 dr congo requirements grasuate award diploma nqf .high certificate no meeting .leave school .expended assessments .exam d etat diploma .certificate professionek .certificate informatics mathematicsvoffics ; result outcom primaryb status registration saqa asset 09121 .saqa institut 30_ 39 nc assess policy.IE099 ,saqa id 67q0 certificate advance phase teach .n1 saqa id 63375.id 67491 entrance .n diplomat -Qualification title national N diplomat engineering. -nqf level:6 . -date submitted to dhet :1105/2023 -date process . DHET -Timebtable /50111002 -N1:engineering studie -ID:2004007064381 -ID:2100002023812 ________________________________ Dear .mr minister of education dhet and deputy member of dhet .tvet college examination directorat and authority competencies. Governments president I' mr tshingombe tshitadi ;acknowledge student st peace college candidat examination career student follow course in duty of nated in rsa 2019 to 2024 , i 'm appear to your department goverment institution for allegation view no result of statement id candidat engineering n1.,n2, n,3,n4 ,n3 and n diplomat saqa outcom in irregularity final n5.n6 /nqf 6. examination national examination was not

delivery in the time external assessments commited irregularities. 1.my motivation and disciplinairy assessment submitted my portofolio on line portal dhet release resultat statement and finalized award diplomat by examination commited irregularityb november invalide subject n3 trade theory electricakbtranscript the result of assessment was note release reson irregularity n3.subject n4 .subject fail druip result february 2022 .directorat assessment trascript material .statement affidavitsubmitted st peace college registrar shalom technical and afric instirut college no result outcom .after 15 days was result scaling n1.n2.n3but statement didint come out not print out by registrations resonement inconveniant. Arbitrary irregularity on february i submitted topics saqa qcto dhet email result of saqa documentation; filing dbe dhet .the commited was under investigation soon to finalyse . 2. I received to dhet committed assessment examinations irregularities the retain , invalide subject 23 february 2022 the time table of n3 subject admnistration exam with those subject trade . electrical trade theory .4 subject november 2023 examination rhe result statement for last examination was not print outcome n1.n2 submited n3 last time table exam only last n4 exam statement print outcome and not time table for n6.,n5 received in examinations november suspension is 11 month for irregularity .follow tvet guideline assessment. 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Saqa accepted only qualifications official examination body country ..external examination based , 26 july 2022. 4.allegation to qcto retain on ; saturday22 january 2022. ; with regard n certificate direction dhet education training (for n4_n6 n diploma or umalusi n3 can not assist with qcto issued Sat ..10 march 203 qxto .certificate@qcto.org.za answer soc please note that the qcto does not issue any of results -lindiwe grace 28 may 2023 inquire to national and assessment college .i have copied our QA unit they will be able to rspond to accorlingly regardc Qcto khuluvhe labour market intelligences lmi esteemed stakeholder 21 aug 2023 was not grante - i receiving Allegation to saqa retain on.10 march 2023 procedure for evaluatiin pro forma invoice .copy id passport.copy final award graduation certificate. Copy of completed transcript mark sheet academic record.proof payment if not meetings requirements can resubmitted again.non compliant; 27 july 2021 application above doe s not meet saqa Final award school diploma degre certificate in 48h . -that my requested letter to the authority minister for my result statement certificat over the date review n diploma 24 month.18 month nated examination to resolve problem after examination irregularities materiel that final result n4 and new re certificate body insurence investigation result center assessment outcome years icass total tvet for my instirut st peace college institu and externsl certificate n1.n3 afric training institut and shalom technical collection print out was not in my application for diploma response from dhet submitted to resolve conflic assessment examination. - your sincerly . Sign :Tshingombe Tshitadi ______________________________ Skip to content Back to Metropolitan Police Service • Home • Apply Now • Events • Experienced Officers • Mailing List • Help Centre • Your Applications: o Applications Made o Interest in being promoted to a Chief Superintendent? Register your interest here and we will notify you when the promotion process launches. 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If you currently work for the Met, and are eligible to apply as an internal applicant, please visit MyHR to view the list of Internal Vacancies. Once you have fully completed the application form and uploaded any relevant documents required, your application will be saved onto our database. You will be able to check for communications and progress regarding your application using your Login Details Existing Users If you already have a username and password, please click Login from the navigation menu. Please note, usernames and passwords are case sensitive. Password reminders can be requested, or technical help is available via the Help Centre. We look forward to receiving your application. Recruitment Team SSCL – delivering services in partnership with the Metropolitan Police Service Disability Confident Statement We view diversity as fundamental to our success. To tackle today's complex policing challenges, we need a workforce made up from all communities that we serve. The Met's diversity ambition is to create a workforce that looks and feels like London. We will police better and have better trust and engagement with the public if we reflect the communities we serve. Applications from across the community are therefore essential. We particularly welcome applications from ethnic minority groups and females. As a Disability Confident employer, the Met has committed to making disability equality part of our everyday practice. We are committed to being an inclusive employer with a diverse and representative workforce at all levels and ensuring that disabled people and those with long term health conditions have the opportunities to fulfil their potential and realise their aspirations. The organisation is committed to providing additional support and adjustments where appropriate to enable people with disabilities to feel more inclusive and have greater accessibility and equality of opportunity at work. If you consider yourself to have access, workplace or reasonable adjustment requirements that need to be accommodated, we ask that you include this information within your application form. Professional advice (medical or otherwise) related to a request for access and adjustment needs will be sought in most cases. All matters will be treated in strict confidence and will not affect any recruitment decisions. Should you indicate that you wish for us to consider a reasonable adjustment or access request, we will work with you and your line manager, where necessary, in conjunction with a medical, specialist, or professional advisor. This is to develop suitable adjustments where appropriate, and to enable equality of opportunity for success in the assessment process. Please note, if you are applying for a police officer role or to become a police community support officer (PCSO) or designated detention officer (DDO), there is a minimum requirement that you must pass a job-related fitness test (JRFT). The core rationale for the JRFT is to ensure that prospective police officers have a minimum level of fitness to be able to undertake Public Safety Training (PST) training. Find out more about police fitness standards. Password Change OK View cookie policy © Mayor's Office for Policing and Crime 2016 Click on any field below to edit it Page Title *2 Ltter Tshingombe Self Asseme Incident Logged On 2024 Page URL * https://archive.org/details/2-ltter-tshingombe-self-asseme-incident-logged-on-2024 Description * engineering theoretical pratical framework Subject Tags * engineering workbase Creator tshingombe Date 2024-06-25 Collection * Community texts Test Item No Language English License Creative Commons Attribution-NonCommercial-ShareAlike More Options Add additional metadata... : (remove) Drag and Drop More Files Here or Name Size x 2 ltter tshingombe self asseme Incident logged on 2024.docx 3.6 MB letter employment self assement , Incidence eaton employement.docx 598 KB Incident logged on 2024, supplie letter tendered.docx 3.2 MB tshingombeassessent.pdf 358 KB tshingombeassessent.pdf.docx Skip to main content Upload Books Video Audio Software Images • • My uploads • My loans • My favorites • My lists • My collections • My web archives • Account settings • Get help • Log out Search metadata Search text contents Search TV news captions Search radio transcripts Search archived web sites Advanced Search • About • Blog • Projects • Help • Donate • • Contact • Jobs • Volunteer • People 2 Ltter Tshingombe Self Asseme Incident Logged On 2024 Iframe Pdf Item Preview 2 Ltter Tshingombe Self Asseme Incident Logged On 2024 by tshingombe editEdit gearManage timeHistory Publication date 2024-06-25 Usage Attribution-NonCommercial-ShareAlike 4.0 International Topics engineering workbase Collection opensource Language English this item is currently being modified/updated by the task: book_op engineering theoretical pratical framework Addeddate 2024-06-26 09:29:41 Enginerrin 600000 Identifier 2-ltter-tshingombe-self-asseme-incident-logged-on-2024 Scanner Internet Archive HTML5 Uploader 1.7.0 plus-circle Add Review Reviews There are no reviews yet. 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We have lots of crime prevention advice which you may also find useful. Consider our environment - please do not print this email unless absolutely necessary. NOTICE - This email and any attachments may be confidential, subject to copyright and/or legal privilege and are intended solely for the use of the intended recipient. If you have received this email in error, please notify the sender and delete it from your system. To avoid incurring legal liabilities, you must not distribute or copy the information in this email without the permission of the sender. MPS communication systems are monitored to the extent permitted by law. Consequently, any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude any binding agreement on behalf of the MPS by email. The MPS accepts no responsibility for unauthorised agreements reached with other employees or agents. The security of this email and any attachments cannot be guaranteed. 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MIP-319-24-0100-000 We'll get back to you in the next two working days to find out more and talk through the next steps. To download a copy of your information, click the button below. Download a copy tshingombe fiston ______________________________ Ticket ID 117354 - Resolved and Closed - application digital support career license ______________________________ PSiRA - Digital Support Team Mon, Jul 1, 2024 at 8:44 AM Reply-To: PSiRA - Digital Support Team To: tshingombefiston@gmail.com Dear tshingombe fiston, Your ticket - application digital support career license with ticket id: 117354 - has been closed. ______________________________ Description of the ticket: You don't often get email from tshingombefiston@gmail.com. Learn why this is important CAUTION: This email originated from outside the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe. • Switch your profile Logged in As : Security Officer fiston In Progress Photo to be taken at PSIRA office on your visit CRC Status - New Application PSIRA Status - Inactive App. No - APP-6163228 Creation Date - 29-06-2024 Phone verified Email verified Finger Print verified In order to proceed further, you need to take a short pre-assessment. Latest Updates Last Updated Date Description Show all 29-06-2024 20:18 PM Registration request submitted by the applicant.. 1 Times Welcome to PSIRA PSiRA Jun 29, 2024, 10:18 PM (13 hours ago) to me Dear fiston tshingombe, We appreciate you taking the time to register. Your account has successfully been created. Please find below the Login credentials and password. 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II) Fill atleast one complete latest project details in employment history for Internship Programme. 1.Position: Name of Organisation: From: Until: Snap-shot of job description: Car guard CTA , general, special security parking,car watch(max characters upto 500) Reason for leaving: 2.Position: Name of Organisation: From: Until: Snap-shot of job description: Assessment police , engineering (max characters upto 500) Reason for leaving: 3.Position: Name of Organisation: From: Until: Snap-shot of job description: Engineering jobs close(max characters upto 500) Reason for leaving: 4.Position: Name of Organisation: From: Until: Snap-shot of job description: Physical security learn(max characters upto 500) Reason for leaving: Copyright © 2016 Private Security Industry Regulatory Authority. 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Thanks Sujith ------------------------------ First Name: Fiston Tshingombe teodor Last Name: tshingombe tshitadi Request Type: Other Issue description from user: Working study Additional system information: BrowserName : Chrome BrowserVersion : 126.0.6478.71 OperatingSystem : Android OperatingSystemVersion : 10 PlatformType : mobile GcsUrl : https://jobs.careers.microsoft.com/global/en/apply?Job_id=1728695&utm_source=Microsoft%20Global%20Careers%20Site&utm_campaign=Microsoft%20Global%20Careers%20Site AreCookiesEnabled : true request id: 73e07463-1bbe-486d-9854-177a37faae12 Case 2406290050000533 Your question was successfully submitted to Microsoft Support TrackingID#2406290050000533 Inbox Microsoft Support Sat, Jun 29, 8:36 PM (2 days ago) to me Having trouble viewing this email? View your request online Support Your question was successfully submitted to Microsoft Support using your Basic support plan. A Microsoft support professional will contact you. Please note: First time is based on Severity and if the case is classified as "24x7" ("Severity A" response cases are always 24x7, "Severity B" are optionally 24x7, and "Severity C" cases are business hours only). Learn more about support response times. Please keep in mind: microsoftsupport.com and microsoft.com are both valid email domains used for communications related to your support request. Incident title: Engineering electrical theoretical practical Support request number: 2406290050000533 Severity rating: C Contact preference: Email Name: Tshingombe Tshitadi Email address: tshingombefiston@gmail.com Contact numbers: You can contact us again about this incident at any time on the Microsoft Azure portal. See the Azure Support FAQ for additional information about Azure Support, including terms and conditions. This email is generated from an unmonitored account. Please do not reply. Thank you, Microsoft Azure Support Additional Information Product: Azure/Subscription management/Purchase, sign up or upgrade issues/Unable to make a purchase Azure Subscription: Azure Subscription ID: This message from Microsoft is an important part of a program, service, or product that you or your company purchased or participates in. Microsoft respects your privacy. Please read our Privacy Statement. One Microsoft Way, Redmond, WA 98052 USA RE: cms 065624 Online form submission: CNR-33457-24-0100-000 Inbox TPMailbox-CMSCCC@met.pnn.police.uk Fri, Jun 28, 5:52 PM (3 days ago) to me Good Afternoon Thank you for contacting us, please can you explain how the police an help you with your report. Also if you have a crime number, please give this to us as well, so we can assist you Kind regards TP CMS -----Original Message----- From: no-reply@service.police.uk Sent: 28 June 2024 15:48 To: TP MAILBOX - CMS CCC Subject: cms 065624 Online form submission: CNR-33457-24-0100-000 ****************************** OFFICIAL - SENSITIVE ****************************** ------------------------------ STEP 1 ------------------------------ First name: Tshingombe ------------------------------ Surname: Tshitadi ------------------------------ Date of birth: 10/11/1982 ------------------------------ Email address: tshingombefiston@gmail.com ------------------------------ Telephone number (for international numbers include the country code): +240725298946 ------------------------------ Postcode: not given ------------------------------ Origin: Form ------------------------------ Crime reference number: eg 1234567/17 or 01/00000/24: 06/23454/24 ------------------------------ When did the incident happen?: 10/11/1982 ------------------------------ What is your involvement in this case?: I 'm student learning assessment police information system management database case relevant irregularity and backlog academic police external assessment in college national examine, qualifition interested, police framework and dhet police officer no transcript academic records, conflic resolve private,crime investigation in circulum private no held result statement outcome, casebook no responsibility, figthing ------------------------------ What is it that you would like us to update you on?: Like on line systeme Portofilio evidence low Scottish low resolution engineering electrical system police resolve irregularity career outcome irregularity missing fire NOTICE - This email and any attachments are solely for the intended recipient and may be confidential. 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Unfortunately you didn't attend, you can however still apply for the role by clicking on the link below, remember to attach a CV and personal statement. Become a custody healthcare practitioner | Metropolitan Police Please do contact me if you have any queries. Kind Regards Dawn Dawn James | Deputy Healthcare Director (Acting) Met Detention (M09) 07917 586675 | dawn.james@met.police.uk Lambeth HQ, 109 Lambeth Road, London, SE1 7LP NOTICE - This email and any attachments are solely for the intended recipient and may be confidential. If you have received this email in error, please notify the sender and delete it from your system. Do not use, copy or disclose the information contained in this email or in any attachment without the permission of the sender. Metropolitan Police Service (MPS) communication systems are monitored to the extent permitted by law and any email and/or attachments may be read by monitoring staff. Only specified personnel are authorised to conclude binding agreements on behalf of the MPS by email and no responsibility is accepted for unauthorised agreements reached with other personnel. While reasonable precautions have been taken to ensure no viruses are present in this email, its security and that of any attachments cannot be guaranteed. Your Tableau Blueprint Assessment results Thank you for taking the time to complete the assessment. We've put together some guidance and actionable next steps. Please find your assessment recommendations below. A link to access your recommendations has also been emailed to you. Your Submission ID: 22141 Agility The Agility workstream is focused on deployment, monitoring and maintenance. These are typically IT-led efforts that rely heavily on understanding the broader technical requirements and overall business strategy. Based on your assessment results, here are your personalized recommendations and next steps. Commitment: Agility L O W H I G H Commitment to agility Data-driven organisations don't just pay lip service to the importance of having an agile and high-performing Tableau environment. They fully commit to realising the value of their Tableau environment – not just deploying Tableau Server or Tableau Cloud, but investing in people, processes and technology to monitor and maintain a modern analytics platform. This commitment is evident in all aspects of the organisation – from organisational structure to day-to-day processes. There is an assigned executive who is accountable for the Tableau environment, ensuring that analytics projects tie back to critical business efforts. R E C O M M E N D E D R E A D I N G The World Food Programme increases agility with data strategy and content governance Capabilities: Agility L O W You started here H I G H Follow these recommendations to build your agility capabilities. Define the roles involved in deploying Tableau Cloud A cross-functional project team will plan and execute the Tableau deployment, namely those in IT/BI professional roles and Tableau administrators. 1. Identify IT/BI professionals and Tableau administrators who will plan and execute the Tableau deployment. 2. Document these assignments on the Roles and responsibilities tab of the Tableau Blueprint Planner. 3. Explore the Tableau Blueprint Workshop to build a robust analytics strategy. Together we will design a customised strategy that will guide your organisation's approach through the development, deployment and management of an enterprise-wide analytics platform. Install and configure Tableau Server Understanding how your hardware, network, databases and applications interoperate is the first step in planning your Tableau Server installation. Documenting this will give you insight for installation and configuration and ongoing platform operations. 1. Review the Tableau deployment section of Tableau Blueprint. 2. Complete the enterprise architecture survey in the Tableau Blueprint Planner. 3. Leverage these insights to install and configure Tableau Server. 4. Explore Server Rapid Start to optimise your server installation. Work with our experts to ensure a successful and stable Tableau Server environment with a plan for monitoring the scalable growth of users, content and interactivity. Configure user authentication and authorisation for Tableau Server To deploy Tableau, you will need to define authentication and authorisation protocols for users in your organisation. 1. Review the Authentication and authorisation section of Tableau Blueprint. 2. Configure either a local identity store or an external identity store at the time of installation. 3. Choose a Tableau Server authentication method that is compatible with your identity store. Configure user authentication and authorisation for Tableau Cloud To deploy Tableau, you will need to define authentication and authorisation protocols for users in your organisation. 1. Review the Authentication and authorisation section of Tableau Blueprint. 2. Several authentication types are supported. Once you select your authentication type, complete configurations on the Authentication page. Configure user provisioning and group synchronisation Depending on your authentication process, you must consider how to provision users and groups to your Tableau environment as well as how to keep those users and groups up to date. Doing so will ensure uninterrupted access to your Tableau environment. 1. Review the User provisioning and group synchronisation section of Tableau Blueprint. 2. Automate adding or removing users using your identity provider (IdP). Manage Tableau licences Licences should be managed according to your organisation's software license processes for allocating to new Tableau users, changing Tableau licence levels as analytical skills increase and reclaiming available Tableau licences when someone leaves the company. 1. Review the Tableau licence management section of Tableau Blueprint. 2. Define a process for allocating licences to new Tableau users. 3. Define a process for changing Tableau licence levels for current Tableau users. 4. Define a process for reclaiming Tableau licences when someone leaves the company. 5. Enable licence management features in your Tableau environment – login-based licence management and grant role on sign-in – and update processes accordingly. 6. Document this information and upload it to the enablement intranet. Manage Tableau licences Licences should be managed according to your organisation's software license processes for allocating to new Tableau users, changing Tableau licence levels as analytical skills increase and reclaiming available Tableau licences when someone leaves the company. 1. Review the Tableau licence management section of Tableau Blueprint. 2. Define a process for allocating licences to new Tableau users. 3. Define a process for changing Tableau licence levels for current Tableau users. 4. Define a process for reclaiming Tableau licences when someone leaves the company. 5. Enable licence management features in your Tableau environment – login-based licence management and grant role on sign-in – and update processes accordingly. 6. Document this information and upload it to the enablement intranet. Deploy client software (Desktop/Prep Builder) Distributing Tableau Desktop and Tableau Prep Builder (for Creators) can be done in a few different ways. Determine and document the process. 1. Review the Tableau deployment and Tableau Prep Builder deployment section of Tableau Blueprint. 2. Determine if you want to customise the installation (e.g. no prompts, inclusion of drivers, etc.) and configure your process accordingly. 3. If virtual desktop support is required, determine how you want to manage licence deactivation. 4. Configure Tableau Desktop licence usage reporting to gather usage information for individual instances of Tableau Desktop. 5. Document this information and upload it to the enablement intranet. Deploy client software (Desktop/Prep Builder) Distributing Tableau Desktop and Tableau Prep Builder (for Creators) can be done in a few different ways. Determine and document the process. 1. Review the Tableau deployment and Tableau Prep Builder deployment section of Tableau Blueprint. 2. Determine if you want to customise the installation (e.g. no prompts, inclusion of drivers, etc.) and configure your process accordingly. 3. If virtual desktop support is required, determine how you want to manage licence deactivation. 4. Configure Tableau Desktop licence usage reporting to gather usage information for individual instances of Tableau Desktop. 5. Document this information and upload it to the enablement intranet. Deploy Tableau Bridge It's common for companies to have a hybrid architecture, with data in public cloud environments, on-premises environments and private cloud environments. Tableau Bridge makes your private data available, up to date and ready to analyse in Tableau Cloud. 1. Review the Tableau Bridge deployment section of Tableau Blueprint. 2. Understand hardware guidelines for virtual environments running Bridge, and deploy Bridge accordingly. 3. Identify what data your users are connecting to and the types of connections they're using. 4. Based on the information gathered in step 3, choose a management model that you will use for Tableau Bridge: centralised or mixed. 5. Document guidance on how users can leverage Tableau Bridge, and post this information to your enablement intranet. Configure backup and restore A Tableau Server administrator should perform daily backups of Tableau Server and its data. Taking these steps can help ensure that Tableau Server runs with minimum loss. 1. Review the Back-up and restore section of Tableau Blueprint. 2. Learn how to use the Tableau Services Manager (TSM) command line tool to back up and restore Tableau data, including Tableau Server's own PostgreSQL database, which stores workbook and user metadata, data extract files, server configuration data and log files. 3. Define a cadence for performing backups using the TSM command line tool. 4. Perform backups in accordance with your planned cadence. Monitor Tableau Server process status In order to ensure continued performance, your administrator should have a process in place for monitoring the Tableau Server process status and a documented plan of action for when the process is "down" or "status unavailable". 1. Review the Tableau Server process status section of Tableau Blueprint. 2. Determine how you will monitor, at minimum, process state changes, especially "Down" and "Status unavailable". 3. Define a process for how administrators will respond if a process is not running as expected (e.g. who will support the issue, where will you work on the issue, how you will inform affected users and keep them up to date, etc.) 4. Explore the Resource Monitoring Tool (included as part of Tableau Advanced Management) to gain a comprehensive look at the health of Tableau Server, including process status. Monitor backgrounder jobs The backgrounder process runs server jobs, including extract refreshes, subscriptions, flow runs and data-driven alerts. Administrators and users will want to know when these processes fail so corrective action can be taken. 1. Review the Built-in alerts section of Tableau Blueprint for guidance on leveraging built-in alerts to monitor for background job failures. 2. Provide enablement to administrators, and the Creator user base more broadly, on how built-in alerts can be leveraged for process failures, such as extract refresh failures, flow run failures, etc. 3. Provide enablement to administrators, and the Creator user base more broadly, on how they can reinitiate the process manually using, in most cases, "Run now". 4. Administrators may also want to develop similar processes using the REST API or tabcmd commands as a fail safe in case process owners are out of the office. 5. Document guidance on how users can review backgrounder jobs, and post this information to your enablement intranet. Monitor backgrounder jobs The backgrounder process runs server jobs, including extract refreshes, subscriptions, flow runs and data-driven alerts. Administrators and users will want to know when these processes fail so corrective action can be taken. 1. Review the Built-in alerts section of Tableau Blueprint for guidance on leveraging built-in alerts to monitor for background job failures. 2. Provide enablement to administrators, and the Creator user base more broadly, on how built-in alerts can be leveraged for process failures, such as extract refresh failures, flow run failures, etc. 3. Provide enablement to administrators, and the Creator user base more broadly, on how they can reinitiate the process manually using, in most cases, "Run now". 4. Administrators may also want to develop similar processes using the REST API or tabcmd commands as a fail safe in case process owners are out of the office. 5. Document guidance on how users can review backgrounder jobs, and post this information to your enablement intranet. Configure built-in alerts Alerts provide critical information about platform outages so you can take immediate action to triage the issue, communicate with users, etc. 1. Review the Built-in alerts section of Tableau Blueprint. 2. Configure notifications about system alerts and failures (e.g. process status, drive space constraints, etc.) during installation. 3. Define a process for how administrators will respond when an alert is triggered (e.g. who will support the issue, where you will work on the issue, how you will inform affected users and keep them up to date, etc.) Configure built-in alerts Alerts provide critical information about platform outages so you can take immediate action to triage the issue, communicate with users, etc. 1. Review the Built-in alerts section of Tableau Blueprint. 2. Administrators should subscribe to Tableau Trust updates to get email, text, and Atom Feed or RSS Feed notifications when Tableau creates, updates or resolves an incident. 3. Define a process for how administrators will respond when a Tableau Trust update is posted (e.g. who will support the issue, where you will work on the issue, how you will inform affected users and keep them up to date, etc.) Review performance thresholds Administrative views are dashboards that are included with Tableau Server or Tableau Cloud and help you understand system utilisation and how users are interacting with content so that you can proactively monitor system activity and other scheduled tasks. 1. Review the Administrative views for monitoring section of Tableau Blueprint for guidance on monitoring performance thresholds. 2. Leverage default administrative views (or create supplemental views) to understand how Tableau is performing throughout the day, including background tasks to ensure they are executing on time. These views should be leveraged to inform real-time action as well as trend analysis. 3. Define a process for how administrators will respond when real-time action is needed (e.g. who will support the issue, where you will work on the issue, how you will inform affected users and keep them up to date, etc.) Review performance thresholds Administrative views are dashboards that are included with Tableau Server or Tableau Cloud and help you understand system utilisation and how users are interacting with content so that you can proactively monitor system activity and other scheduled tasks. 1. Review the Administrative views for monitoring section of Tableau Blueprint for guidance on monitoring performance thresholds. 2. Leverage default administrative views (or create supplemental views) to understand the success/failure of scheduled tasks and Bridge resource utilisation. These views should be leveraged to inform real-time action as well as trend analysis. 3. Define a process for how administrators will respond when real-time action is needed (e.g. who will support the issue, where you will work on the issue, how you will inform affected users and keep them up to date, etc.) Monitor licence utilisation Monitoring licences can help your administrators monitor usage and answer questions like who is using licences, which types of licences they're using and if you need more or fewer licences. 1. Review the Administrative views for monitoring section of Tableau Blueprint for guidance on monitoring licence utilisation. 2. Define a monthly cadence for reviewing licence utilisation details, including usage, availability and upcoming expirations. 3. Review licence utilisation in accordance with your planned cadence. Monitor licence utilisation Monitoring licences can help your administrators monitor usage and answer questions like who is using licences, which types of licences they're using and if you need more or fewer licences. 1. Review the Administrative views for monitoring section of Tableau Blueprint for guidance on monitoring licence utilisation. 2. Define a monthly cadence for reviewing licence utilisation details, including usage, availability and upcoming expirations. 3. Review licence utilisation in accordance with your planned cadence. Define an upgrade process, including end-user communications plans Defining the when and how on upgrades across all products in the Tableau platform includes decision points around upgrade frequency, version selection and version compatibility. When these areas are addressed early, administrators can better manage users' expectations, rather than having to react to business demands for new features and functionality. 1. Review the Upgrades section of Tableau Blueprint. 2. Define a cadence for performing platform upgrades, including Tableau Server, Tableau Desktop, Tableau Prep and Tableau Bridge. 3. Develop an enablement plan to prepare users for platform upgrades. 4. Develop a communications plan to inform users about platform upgrades, leveraging all channels available in your organisation. 5. Perform upgrades in accordance with your planned cadence. 6. Explore Server Upgrade, where Tableau experts do the heavy lifting so you can quickly and successfully upgrade your environment and your team can produce deeper and more relevant findings by taking advantage of Tableau's newest features. Define an upgrade process, including end-user communications plans Defining the when and how on upgrades across all products in the Tableau platform includes decision points around upgrade frequency, version selection and version compatibility. When these areas are addressed early, administrators can better manage users' expectations, rather than having to react to business demands for new features and functionality. 1. Review the Upgrades section of Tableau Blueprint. 2. Define a cadence for performing platform upgrades, including Tableau Desktop, Tableau Prep and Tableau Bridge. 3. Develop an enablement plan to prepare users for platform upgrades. 4. Develop a communications plan to inform users about platform upgrades, leveraging all channels available in your organisation. 5. Perform upgrades in accordance with your planned cadence. Complete load test and capacity planning Load testing helps you understand your Tableau Server's capacity with respect to your unique environment, data, workload and usage profile. Capacity planning, by contrast, helps you ensure optimal Tableau Server performance and sufficient capacity to handle increased workloads. 1. Review the Load testing section and Capacity planning section of Tableau Blueprint. 2. Define a cadence for performing load testing. In general, this should be conducted two to four times a year in conjunction with upgrades and server scale-up or scale-out expansions. 3. Define a cadence for performing capacity planning. Depending on the size of your organisation, user demand and historical growth rates, you may need to do this at 6-month, quarterly or monthly intervals. 4. Perform load testing and capacity planning in accordance with your planned cadence. Perform database maintenance Data maintenance creates free space on the Tableau Server deployments by deleting old files, including log files, temp files and rows from the http_request table. 1. Review the Database maintenance section of Tableau Blueprint. 2. Define a cadence for performing database maintenance. 3. Perform database maintenance in accordance with your planned cadence. Deploy Tableau Mobile Mobile business intelligence enables any user to make decisions no matter where they are. As a result, you should provide users with the ability to access Tableau from anywhere. 1. Review the Tableau Mobile deployment section of Tableau Blueprint. 2. Gather organisational requirements for enterprise apps to better understand how you can control app delivery, customise the sign-in experience, configure app policies, and provide additional security and governance controls. 3. Document guidance on how users can leverage Tableau Mobile, and post this information to your enablement intranet. Deploy Tableau Mobile Mobile business intelligence enables any user to make decisions no matter where they are. As a result, you should provide users with the ability to access Tableau from anywhere. 1. Review the Tableau Mobile deployment section of Tableau Blueprint. 2. Gather organisational requirements for enterprise apps to better understand how you can control app delivery, customise the sign-in experience, configure app policies, and provide additional security and governance controls. 3. Document guidance on how users can leverage Tableau Mobile, and post this information to your enablement intranet. Install add-ons and extensions on Tableau Server Tableau supports a robust extensibility framework for deep and complex enterprise integrations and embedded analytics solutions. Define a process for how you will leverage these capabilities in your environment. 1. Review the Extensibility section of Tableau Blueprint. 2. Determine the extent to which you want to install add-ons and extensions to be deployed in the environment. 3. Document guidance on how users can request the installation of add-ons and extensions, and post this information to your enablement intranet. Install add-ons and extensions on Tableau Cloud Tableau supports a robust extensibility framework for deep and complex enterprise integrations and embedded analytics solutions. Define a process for how you will leverage these capabilities in your environment. 1. Review the Extensibility section of Tableau Blueprint. 2. Determine the extent to which you want to install add-ons and extensions to be deployed in the environment. 3. Document guidance on how users can request the installation of add-ons and extensions, and post this information to your enablement intranet. Governance Governance makes self-service analytics possible. It is the combination of controls, roles and repeatable processes that create trust and confidence in data and analytics within your organisation. Based on your assessment results, here are your personalized recommendations and next steps. Commitment: Governance L O W H I G H Commitment to governance A commitment to governance means fully embracing a modern analytics workflow – enabling, rather than restricting, access to trusted data and content. By defining the right balance of flexibility and control, organisations are better equipped to build a foundation for every data-driven decision, establishing trust and confidence to drive business value. This commitment is evident in all aspects of the organisation – from organisational structure to day-to-day processes. There is an assigned executive who is accountable for governance, ensuring that analytics projects tie back to critical business efforts. R E C O M M E N D E D R E A D I N G The World Food Programme increases agility with data strategy and content governance Proficiency Proficiency focuses on user education, measuring adoption and engagement, and increasing data fluency within your organisation. Based on your assessment results, here are your personalized recommendations and next steps. Commitment: Proficiency L O W H I G H Commitment to proficiency An organisation's people are at the heart of a thriving data culture. A commitment to proficiency means enabling everyone who encounters data – regardless of skill levels and data fluency – to use data for decision-making instead of using instincts or feelings, turning data into insights effectively. This commitment is evident in all aspects of the organisation – from organisational structure to day-to-day processes that focus on user education, adoption and engagement, and increasing data fluency. There is an assigned executive who is accountable for establishing analytics proficiency amongst users, ensuring that analytics projects tie back to critical business efforts. R E C O M M E N D E D R E A D I N G JPMorgan Chase prioritises community and data literacy Community Community focuses on enabling user growth and evangelising analytics through communications, engagement activities and support. Based on your assessment results, here are your personalized recommendations and next steps. Commitment: Community L O W H I G H Commitment to community A commitment to community centres around inspiring and celebrating data-driven wins. Data-driven organisations fully commit to creating a network of users who share enthusiasm for putting data at the centre of every conversation. This helps to drive adoption and learning around analytics and insights through collaboration and sharing. This commitment is evident in all aspects of the organisation – from organizational structure to day-to-day processes spanning communications, engagement and support. There is an assigned executive who is accountable for fostering an analytics community, ensuring that analytics projects tie back to critical business efforts. R E C O M M E N D E D R E A D I N G Red Hat deepens data culture through its analytics community Capabilities: Community L O W You started here H I G H Follow these recommendations to build your agility capabilities. Name dedicated Community Leaders A dedicated Community Leader will coordinate efforts to document enablement resources, connect users within your company and generate enthusiasm among a group of people founded on the common cause of putting data at the centre of every conversation. 1. Review the Tableau project team roles and responsibilities section of Tableau Blueprint. 2. Define the scope of the Community Leader role. 3. Work with executive sponsors to determine the best course of action to staff the Community Leader role. It may be necessary to open up headcount for this specific role. Launch and update an enablement intranet As your deployment grows, an enablement intranet allows numerous users to connect across departments and geographic locations. It will serve as the hub for all Tableau resources with the goal of creating a consistent user experience and helping everyone form new habits based on best practices. 1. Review the Tableau enablement intranet section of Tableau Blueprint. 2. Identify if there is an existing infrastructure you can use for your enablement intranet. 3. Map out what sections/pages you will include on your Enablement Intranet (e.g., getting started resources, a user directory, an events calendar, educational resources, a blog, etc.). 4. At launch, make sure your enablement intranet includes, at a minimum, getting-started resources (e.g. how to obtain a Tableau licence and access the Tableau environment and learning resources) to enable user onboarding. 5. Promote your Enablement Intranet to users and give them an opportunity to request or provide feedback on the content. Launch a Tableau discussion forum Discussion forums make your community stronger and create a peer-to-peer support system. In addition, they help community leaders determine topics that may need more attention in training or with engagement activities. 1. Review the Tableau discussion forums and chat section of Tableau Blueprint. 2. Identify any existing infrastructure you can leverage for your discussion forum. 3. Explore the Tableau forums for inspiration on topics to feature and how to organise the forum. 4. Define a process to include answers to frequently asked questions in other enablement efforts. Start a Tableau user group During user group meetings, people can openly share information across different teams and departments. Regardless of skill level, it's a great way for everyone who attends to learn, network with other users and exchange fresh perspectives on solving business problems with data. 1. Review the Tableau user group section of Tableau Blueprint. 2. Establish a cadence for Tableau user group meetings and decide on a forum for meetings (in-person, virtual or hybrid). 3. Set an agenda for the meeting, sourcing ideas from the Tableau Blueprint, your Tableau discussion forum and public Tableau user groups. 4. Encourage users to volunteer as guest speakers. Ask them to talk through use cases so the broader community can appreciate the art of the possible. 5. Send an invitation to all Tableau users. 6. Cross-promote your Tableau User Group meeting across all community channels. Schedule a lunch-and-learn series Lunch & learn events are an informal option to help users develop skills ranging from successfully viewing and interacting with data to building high availability into Tableau Server deployments. 1. Review the Tableau Lunch & Learn section of Tableau Blueprint. 2. Schedule a recurring monthly meeting, no longer than one hour. 3. Identify a topic for each lunch & learn. You can crowdsource topics from your Tableau Forum, or ask your Tableau Champions or Tableau Data Doctors to provide ideas based on what they're seeing amongst users. 4. Leverage free training videos on Tableau.com. 5. Send an invitation to all Tableau users, and allow others to join as well. 6. Cross-promote your lunch & learn series across all community channels. Plan for an annual Tableau Day or Analytics Day A Tableau Day (otherwise known as an Analytics Summit or Analytics Day) helps raise the visibility of data and analytics within your company, highlight examples of how data has had transformational impact, teach users new skills, and more. 1. Review the Tableau Day section of Tableau Blueprint. 2. Establish a working team to help plan and execute the event. 3. Define the outcomes you want to achieve (e.g. learn about use cases, appreciate the transformational impact of data, develop new skills). 4. Create an outcomes-oriented agenda. At a minimum, you should include: an executive welcome, user- provided success stories (use cases) from around the organization, Tableau how-to sessions, and Data Doctor sessions. 5. Make the event fun! Provide Tableau swag to users, make the event interactive with polls or surveys, and more! 6. Reach out to your Tableau account team if you want help planning and delivering a Tableau Day. Encourage users to join public Tableau user groups Public Tableau user groups provide an opportunity for like-minded data rockstars to meet with one another. Regardless of skill level, it's a great way for everyone who attends to learn, network with other users and exchange fresh perspectives on solving business problems with data. 1. Review the Area Tableau user group section of Tableau Blueprint. 2. Encourage users to join public Tableau user groups where there is an opportunity to do so. 3. Cross-promote public Tableau user groups across all community channels. Encourage users to participate in Tableau Public virtual challenges Run by the Tableau Community, these events inspire others, demonstrate different ways to solve problems and offer different perspectives for applying Tableau. This includes well-established activities like Makeover Monday and Workout Wednesday, among others. 1. Review the Tableau Public virtual challenges section of Tableau Blueprint. 2. Cross-promote Tableau Public virtual challenges across all community channels. 3. Provide users with time to participate in these community-led events. 4. Create opportunities to bring users together (like your Tableau User Group) to discuss their learnings afterwards. This will help encourage mutual learning and celebrate individual success. Send users to Tableau Conference People come to Tableau Conferences to learn new Tableau skills, find inspiration, network with other attendees and build lasting connections. It's important that your employees be a part of this experience so they can kick their skills into high gear. 1. Review the Tableau Conference section of Tableau Blueprint. 2. Build a plan to send people to Tableau Conference – from authors and analysts, to executive sponsors and data stewards, to server architects and site administrations. 3. In between Tableau Conferences, leverage content from previous years as part of your community communications, engagement and support efforts. 4. Encourage enthusiastic Tableau users to apply to speak at Tableau Conference to help develop their leadership skills and knowledge around topics such as your organisation's use case. Launch a formal Tableau Champions programme A Tableau Champions programme identifies and elevates super users, helping them realise their greatest potential while also enlisting them as leaders, teachers and advocates of data culture in your organisation's community. This is vital for your adoption process because as your deployment expands to new departments and teams, new champions will need to be developed to support the scaling of your analytics practice. 1. Review the Tableau champion development section of Tableau Blueprint for inspiration. 2. Define the scope of your formal Tableau Champions programme. Consider including Tableau Data Doctor as a key part of the program. 3. Based on your scope, first design your programme by defining the Tableau Champion role and thinking through how you will develop and reward them. 4. Once the programme has been designed, make a plan to run your Tableau Champions programme, including branding, identifying champions, and day-to-day operations. 5. Create an email alias or chat group (like a Slack channel) for these individuals to make it easy for them to collaborate with each other. Start a Tableau champions group Champions should meet as a group to share what they are hearing and seeing from users to feed into community-wide enablement activities, representing the Tableau community within your organisation. 1. Review the Tableau champions group section of Tableau Blueprint. 2. Establish your champions programme. 3. Establish a cadence for champions group meetings and decide on a forum for meetings (in-person, virtual or hybrid). 4. Define a process to review concerns and ideas that are raised in other enablement efforts. Establish a business leader steering committee Executive sponsors serve as the governing body for the use of Tableau, setting the vision for modern analytics. Executive sponsors should meet on a regular cadence to accomplish their collective duty. 1. Review the Tableau project team roles and responsibilities section of Tableau Blueprint. 2. Identify the executive sponsors in your organisation. 3. Define the purpose and scope of your business leader steering committee as well as a meeting cadence. Define escalation paths In addition to the proactive steps you have taken with self-service help resources and education initiatives published on your enablement intranet, your user community should be able to request more support in case these two approaches do not answer their questions or resolve the issue. 1. Review the Tableau support processes section of Tableau Blueprint. 2. Identify the types of support requests you're currently receiving from users (e.g. feature/function, data connectivity, where to find information, etc.). 3. Determine the escalation path users should follow to get help if they have questions related to these topics. 4. Promote self-service help options (e.g. Tableau discussion forum) as your users' first line of defence. 5. Create a process for users to escalate issues if need be to Tableau administrators who generally have Tableau case management rights. 6. Document this information and post it to your enablement intranet. Leverage technology to manage support cases Larger organisations may want to leverage a ticket management system or other technology to more formally manage help requests. 1. Review the Tableau support processes section of Tableau Blueprint. 2. Review your organisation's current volume of support requests to determine if a formal system is necessary. 3. Identify any existing infrastructure you can leverage to manage support cases. 4. If you implement a tracking system, document this information and post it to your enablement intranet. Log and categorise support requests Help requests are powerful data points. Through analysis, you can determine common issues that users face and use this information to inform user enablement content, Tableau User Group topics, etc. In other words, a regular review of support escalations is a source of user feedback than can be leveraged to expedite user proficiency and/or escalate and resolve previously unidentified user/system issues. 1. Review the Tableau support processes section of Tableau Blueprint. 2. Log and categorise support requests so they can be easily analysed. 3. Review the data with Tableau Champions and Executive Sponsors during regularly scheduled meetings to inform • enablement efforts. • Home • • Favorites • • Recents • • Shared with Me • • Recommendations • • • Personal Space • • Collections • • Explore • • Tableau Pulse • • • External Assets • • • Users • • Groups • • Jobs • • Tasks • • Data Labels • • Site Status • • Settings Youhave13daysleftinyourtrial. Home Favorites and Recents Click the star icon to add a favorite. Accelerators See All Start from a pre-built workbook. Simply sign in to your data source, or use sample data to get started. Salesforce Marketo Oracle Eloqua ServiceNow ITSM LinkedIn Sales Navigator Learn Tableau. Free training videos Interactive Tours Check your email to verify your account. Just so you know, you can only log back in once you confirm your email. 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Delete unused clients to make room for more. Learn More No connected clients. Personal Access Tokens Personal access tokens (PATs) are long-lived authentication tokens that allow you to sign in to the Tableau REST API without requiring hard-coded credentials or interactive signin. Learn more Your site administrator has disabled PAT creation. You have no personal access tokens. Notifications Preferences On Tableau Email Collaboration Comment mentions Share Data alerts Predictive Model Systems Status Flow runs Extract jobs Webhooks View Acceleration If grayed out, the notification option is disabled for use. Subscriptions You can receive email when a subscription on your site is suspended due to repeated failures. Data Alerts You can receive email when an alert on your site is suspended due to repeated failures. Preferences Start Page To change your start page, navigate to a page. From your profile menu, select Set as Start Page > For Me. 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Skip to the top of the activity timeline Knowledge Search Knowledge...: Filtered by 0 filters Articles(0) Case Comments(0) Files(0) Drop Files Or drop files Case History(1) Date: 2024/07/01, 12:07 Field: Created. User: tshingombe tshitadi Original Value: New Value: View AllCase History • • • • • • • • • o Notifications View profile Leave Feedback30Days left in trial Skip to NavigationSkip to Main Content Sales • • • • Guidance Center • • • Task Reminder Notification:Engineering jobs 2024/07/01 Event Reminder Notification:Engineering jobs All-Day Event • 4 new notifications • Sales HomeLeads Accounts Contacts Opportunities Calendar ForecastsDashboards Reports Quotes Home Seller HomeGood afternoon, Tshingombe tshingombe. Let's get selling! 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Money Management 2. Personal Finance in Action To gain the Award learners must achieve both units. Once learners have studied the content of the units, they will sit their final assessments via SQA's on screen assessment system (SOLAR). This pack is intended to help learners become familiar with the terms used in financial products and services and understand more about how they work and what they are used for before they sit their final assessment. Questions included in the final assessment will draw from the content of units one and two. Learners can use the explanations and descriptions given within this pack as a starting point for further investigation into the various topics covered, or they can use it as a reminder of the various topics covered. PLEASE NOTE Where terms are defined in this document by giving examples of specific values that might apply, the values given are usually based on 2021-22 rates. For example: VAT; Income Tax Bands; Land and Buildings Transaction Tax rates; ISA savings limit; Capital Gains Tax threshold; etc. Learners must be aware that the government has the authority to increase or decrease tax and threshold rates each year depending on inflation and other economic, societal or political factors. • Unit 1: Money Management • Unit 2: Personal Finance in Action • Feedback • • • • • • • Skip to main content SQA Academy • Home • Dashboard • My courses • Course categories • Get help • Contact form Edit mode ft fiston tshingombe User profile Blocks User details • Edit profile • Email address tshingombefiston@gmail.com (Hidden from everyone except users with appropriate permissions) Privacy and policies • Contact the privacy officer • Data requests • Export all of my personal data • Delete my account • Policies and agreements Course details • Course profiles o Personal Finance Award SCQF Level 6 Miscellaneous • Blog entries • My certificates • Forum posts • Forum discussions • Learning plans Reports • Browser sessions • Grades overview Mobile app • This site has mobile app access enabled. 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The consultation included extensive engagement with colleges, sector skills bodies, Skills Development Scotland (SDS), the Scottish Funding Council and other stakeholders. The Scottish Credit and Qualifications Framework (SCQF) at Higher National Certificate (HNC) at SCQF level 7 and Higher National Diploma (HND) at SCQF level 8 are vital for many learners, creating opportunities in both education and employment. It is important that the NextGen: HN qualifications are innovative, creative, dynamic, flexible and resilient, and serve as key enablers to both further study and work. We considered the current position of HN Qualifications, using service design elements to collate ideas and opportunities to develop world-class, ambitious qualifications that will meet the needs of learners, education and industry. Continued Government strategies and drivers that influenced the NextGen: HN consultation include: • • • Developing the Young Workforce(opens in a new tab) • • • Skills 4.0: A skills model to drive Scotland's future(opens in a new tab) • • • The 15-24 Learner journey Review(opens in a new tab) • • • Scotland's Colleges: Delivering for All(opens in a new tab) • • • Digital Learning and Teaching Strategy for Scotland(opens in a new tab) • • • #SQAfutures2018(opens in a new tab) • • • SQA Corporate Plan 2023-24(opens in a new tab) 75% Completed Unstarted Unstarted Unstarted Unstarted Unstarted Unstarted Unstarted Unstarted Skip to main content SQA Academy • Home • Dashboard • My courses • Course categories • Get help • Contact form Delivering and Marking SQA Advanced Qualification Graded Units • Course • SCORM package You are enrolled in the course. 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MDH Plant Training Ltd This family-run business expanded their portfolio with SQA's construction qualifications. IHRDC International Qualifications IHRDC worked with us to align its competency models with SQA vocational standards Case studies: NextGen: HN Read more about the process of developing our NextGen: HN qualifications. Industry Insights: Conveyancing and Property Law Our conveyancing and property law market report SSERC SSERC worked with us to have their Young STEM Leader Programme (YSLP) award credit rated on the SCQF. Industry Insights: Construction Read our construction market reports LCCI Global Qualifications LCCI Global Qualifications partnered with SQA to offer internationally recognised qualifications. ISDC ISDC creates Customised Awards in partnership with SQA Humber Maritime College Find out how SQA Advanced Certificates are supporting Merchant Navy Cadetships. 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SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering Contents 1 Introduction 1 2 Rationale for the revisions of the awards 1 2.1 Electrical Engineering 1 2.2 SQA Advanced Engineering Frameworks 1 2.3 History and market research to support the SQA Advanced Certificate and Diploma in Electrical Engineering 5 2.4 Candidates 6 3 Aims of the qualification(s) 7 3.1 General Aims of the qualification(s) 7 3.2 Specific Aims of the qualification(s) 7 3.3 General Aims of the SQA Advanced Diploma in Electrical Engineering 8 3.4 Specific Aims of the SQA Advanced Diploma in Electrical Engineering 8 3.5 How the General Aims are met in the SQA Advanced Certificate and SQA Advanced Diploma Award Structures and Content 10 3.6 How the Specific Aims are met in the SQA Advanced Certificate and SQA Advanced Diploma Award Structures and Content 12 4 Recommended entry to the qualification(s) 13 4.1 Access requirements 13 4.2 Alternative access arrangements 13 5 Structure of the qualifications 14 5.1 SQA Advanced Certificate in Electrical Engineering Structure 14 5.2 SQA Advanced Diploma in Electrical Engineering Structure 16 5.3 Graded Units 18 5.4 Core Skills 20 5.5 Conditions of the Award 28 5.6 SCQF levels 28 6 Approaches to delivery and assessment 30 6.1 Content and context 30 6.2 Delivery 31 6.3 Assessment 32 6.4 Re-assessment 34 7 General information for centres 36 7.1 Equality and inclusion 36 7.2 Internal and external verification 36 7.3 Assessment moderation 36 7.4 Open and Distance Learning 36 7.5 General information for candidates 37 7.6 Relationship to other awards 39 7.7 Articulation arrangements 39 8 Glossary of terms 39 9 History of changes 41 Acknowledgements 41 Further information 41 Appendix 1: SQA Advanced Certificate and SQA Advanced Diploma Timetables 42 Appendix 2: Assessment Loading Grid 45 SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 1 1 Introduction This document was previously known as the Arrangements Document. The purpose of this document is to: • assist centres to implement, deliver, and manage the qualification • provide a guide for new staff involved in offering the qualification • inform course managers, teaching staff, assessors, learners, employers, and Higher Education institutions of the aims and purpose of the qualification • provide details of the range of learners that the qualification is suitable for and the progression opportunities This document has been written in order to assist centres in preparing for approval of the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and maintaining the awards thereafter. These two awards were developed under the new SQA Design Principles, were validated in March 2005, and replace the existing SQA Advanced Certificate in Engineering: Electrical and the SQA Advanced Diploma in Engineering: Electrical. This document includes details on the background to the development of the new awards, their aims (both general and specific), recommended access requirements, information about the structure of the awards, recommendations on delivery and assessment and other guidance for centres. 2 Rationale for the revisions of the awards 2.1 Electrical Engineering The term Electrical Engineering in the context of this document covers the range of subjects traditionally included in SQA Advanced Qualifications in Electrical Engineering, namely power, plant and electrical installation. The title Electrical Engineering is intended to provide candidates, lecturers, Higher Education, employers and professional bodies with a clear, unambiguous title. Electronics has not been included in the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering titles as only sufficient electronics has been included in both awards to underpin studies in the various branches of electrical engineering. 2.2 SQA Advanced Engineering Frameworks In 1996 the SQA validated nationally a large number of new SQA Advanced Engineering awards including two awards entitled SQA Advanced Certificate in Engineering: Electrical and SQA Advanced Diploma in Engineering: Electrical. A major difference between these and previous awards were that they all sat within an SQA Advanced Engineering Framework which in general terms consisted, for both SQA Advanced Certificates and SQA Advanced Diplomas, of a common core of units (units common to all SQA Advanced Certificate and SQA Advanced Diploma in Engineering awards), a principles/technology and optional sections. The benefits of this Framework structure were seen to include the following: SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 2 • provide a wide range of SQA Advanced Engineering qualifications to meet the needs of different engineering sectors • improve the credibility and esteem of individual SQA Advanced Engineering awards • clarify those competencies that were general to all incorporated engineers and those that were specific to particular engineering disciplines • provide opportunities for the efficient delivery of SQA Advanced Engineering units by, for example, incorporating units that were common to a number of different SQA Advanced awards • facilitate better progression between SQA Advanced Certificate, SQA Advanced Diploma and degree engineering awards Prior to the development of any SQA Advanced Engineering awards a major consultation exercise was undertaken on the overarching SQA Advanced Engineering Framework to test the validity of the Framework. This consultation comprised of the following five strands: • a questionnaire survey with stakeholders of SQA Advanced Engineering awards • a series of meetings with various interested stakeholders of SQA Advanced Engineering awards • desk based research • discussions (followed by endorsement) of a proposed SQA Advanced Engineering Framework at an SQA Advanced Engineering Steering Group meeting • a major consultation event with FE colleges on 24 May 2002 which included a questionnaire survey The consultation revealed continuing strong support for an overarching SQA Advanced Engineering Framework but with the following modifications: • a reduction in the number of common core units • a strengthening of the Principles/Technology section with an even stronger emphasis on the teaching of core engineering principles and technologies Optional sections are retained in all SQA Advanced Certificate and SQA Advanced Diploma Engineering awards. The revised SQA Advanced Certificate and SQA Advanced Diploma in Engineering Frameworks are shown in block diagram form in Figures 2.1 and 2.2. It should be noted that the PDAs shown in both diagrams may be developed as more SQA Advanced units come on stream; currently none of these PDAs exist. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 3 SQA Advanced Certificate in Engineering Framework Communication: Practical Skills 1 credit mandatory unit SQA Advanced Certificate 8 Principles/Technology credits 2 optional credits Strong emphasis on core principles/technologies A limited degree of specialisation within the engineering specialist area Corresponding SQA Advanced Diploma award in the same engineering discipline area Graded Unit Examination 1 credit PDA Specialist Engineering Areas Team Working & Leadership Supervisory Skills Information Technology Figure 2.1 SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 4 SQA Advanced Diploma in Engineering Framework Figure 2.2 Communication: Practical Skills Information Technology: Applications Software 1 Business Awareness & CPD 3 credits of mandatory units Corresponding SQA Advanced Certificate in Engineering award in the same Engineering discipline area embedded as the first year of the SQA Advanced Diploma SQA Advanced Diploma 17* Principles/Technology credits 7 optional credits More advanced engineering principles High level of specialisation in engineering specific subject areas(s) *Includes the 8 Principles/Technology credits in the SQA Advanced Certificate SQA Advanced Certificate Graded Unit Examination 1 credit PDA Specialist Engineering Areas Team Working & Leadership Supervisory Skills Information Technology 2 Graded Units SQA Advanced Diploma in Engineering Project 2 credits SQA Advanced Certificate in Engineering Examination 1 credit SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 5 2.3 History and market research to support the SQA Advanced Certificate and Diploma in Electrical Engineering 2.3.1 History of the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards The introduction of the SCOTVEC Advanced Courses Development Programme lead to the replacement of the 132 SQA Advanced Diploma in Electrical and Electronic Engineering award by a competence based SQA Advanced Diploma in Electronic and Electrical Engineering in 1989. Shortly after an SQA Advanced Certificate in Electronic and Electrical Engineering was introduced as part of a national development and replaced the 101 SQA Advanced Certificate in Electrical and Electronic Engineering. However, there continued to be little commonality between the new SQA Advanced Certificate and SQA Advanced Diploma awards. The first attempt to harmonise the two awards took place as part of a consortium development in the early nineties. In 1995 and 1996 the two awards were totally harmonised (eg the SQA Advanced Certificate in Electrical Engineering becoming effectively the first year of the SQA Advanced Diploma) as part of a major SCOTVEC national development which saw the introduction of an overarching SQA Advanced Engineering Framework. The two new awards represent a further development of SQA Advanced Engineering awards taking full account the new SQA Advanced Design Principles and providing an opportunity to update the awards in light of technological and educational developments. 2.3.2 Market research The development of the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards included extensive market research which is summarised below in Table 2.3. Table 2.3 Stakeholder Method All Major desk based research gathering and analysing data from various sources (eg SEMTA, FutureSkills Scotland, etc). Delivery Centres Initial postal survey of all delivery centres followed by two National seminars. Draft units, assessment exemplars and outlines of graded units were made available to centres. Employers Surveys of employers were carried out at the commencement of the development of the two awards and when the two award structures and units were nearing finalisation. Information obtained from employers helped to inform both structure and unit development. Higher Education Letters of support for articulation between the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering and degree awards SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 6 were received from seven Higher Education institutions. Professional Bodies The Chair of the Institute of Incorporated Engineers was a member of the Validation Panel and provided a broad measure of support for the two new developments at the Validation Event which was later confirmed in writing. Health and Safety Executive A representative from the Health and Safety Executive provided some invaluable input into the development of the Electrical Safety Unit and other units with significant safety content. Students While not consulted directly the student experience of the current SQA Advanced Certificate and SQA Advanced Diploma in Engineering: Electrical was taken fully into account in the new developments. 2.4 Candidates 2.4.1 SQA Advanced Certificate Candidates Candidates at SQA Advanced Certificate level may already be in employment and will attend centres on a day-release or other part-time basis. The SQA Advanced Certificate framework structure is flexible enough to allow centres to deliver the SQA Advanced Certificate award by various modes of delivery for example, two-year day- release, evening attendance etc. The options chosen by employed candidates may reflect the branch of industry in which they are employed or may be used to gain knowledge of other areas within electrical engineering in order to improve their career opportunities in the employment market. Part-time candidates may also use the SQA Advanced Certificate award to gain entry to degree level studies. Full-time SQA Advanced Certificate candidates may be school leavers intending to articulate to a university degree course, or candidates who wish to progress from an appropriate National Certificate qualification. Full-time candidates may also be more mature persons who are seeking a change of employment. Since the SQA Advanced Certificate award forms an integral part of the SQA Advanced Diploma award, full-time candidates will complete 15 unit credits in the first year of the course, 12 of these meeting the SQA Advanced Certificate requirements. In addition to university entrance, successful full-time SQA Advanced Certificate candidates have enhanced their prospects of gaining employment in the Electrical Engineering industry. 2.4.2 SQA Advanced Diploma Candidates The SQA Advanced Diploma award programme will normally be delivered on a two- year full-time basis, although this does not preclude other delivery patterns. This being SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 7 the case, SQA Advanced Diploma candidates may be school leavers who have an interest in some aspect of electrical engineering and wish to include this in their career path. This may be candidates who wish to progress from an appropriate National Certificate qualification or candidates who have previously completed the SQA Advanced Certificate award and wish to progress to the SQA Advanced Diploma. The typical SQA Advanced Diploma candidate will therefore be a young person intending to articulate to a university degree course. The units of the SQA Advanced Certificate/Diploma framework have been designed to introduce candidates to electrical engineering and to take topics to a more advanced level than is possible in the SQA Advanced Certificate. Mature candidates may also embark on the SQA Advanced Diploma programme. The SQA Advanced Electrical Development Team and unit writers were aware that such candidates may not have studied for some time and will require additional support in developing their learning skills. The SQA Advanced Electrical units have been designed as far as possible to provide candidates with opportunities to develop critical knowledge and understanding of theory and practical hands-on skills required by practising electrical incorporated engineers. 3 Aims of the qualification(s) 3.1 General Aims of the qualification(s) The general aims of this award are to: 3.1.1 enhance candidates' employment prospects 3.1.2 support candidates' Continuing Professional Development and career development 3.1.3 enable progression within the SCQF (Scottish Credit and Qualifications Framework) 3.1.4 develop candidates' ability to apply analysis and synthesis skills to the solution of electrical engineering problems 3.1.5 develop learning and transferable skills (including Core Skills) 3.2 Specific Aims of the qualification(s) The specific aims of this award are to: 3.2.1 provide an award that will allow candidates to work now, or in the future, as electrical technicians or incorporated electrical engineers 3.2.2 provide an award that creates a route towards meeting the academic requirements for Incorporated Engineer status SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 8 3.2.3 develop an award that on successful completion will allow candidates to progress to SQA Advanced Diploma Electrical Engineering and/or a degree in Electrical Engineering or related subject discipline area The development of this new SQA Advanced Certificate award will also allow candidates to: 3.2.4 develop a range of Communication knowledge and skills relevant to the needs of electrical incorporated engineers 3.2.5 develop knowledge, understanding and skills in a range of core electrical principles, electrical power systems, electrical machine principles and electrical safety at SQA Advanced level (these studies in core electrical principles and technologies are underpinned by a mandatory unit in Mathematics) 3.2.6 develop knowledge and skills in the use of electrical and electronic instruments 3.2.7 achieve a degree of specialisation within the following areas: Electrical Principles, Information Technology, Three Phase Induction Motors, Power Electronics, Inspection and Testing of Low Voltage Electrical Installations, Programmable Logic Controllers, Electrical Systems in Hazardous Environments, Control Systems, further Mathematical studies, Electrical Installation Skills and Engineering Quality 3.2.8 on successful completion of the award, achieve the Core Skill Communication at Higher level and the component Using Number of the Core Skill Numeracy at Higher level. The candidate will also be provided with opportunities to develop the following Core Skills: Information Technology at Higher level, the component Using Graphical Information of the Core Skill Numeracy at Higher level, Problem Solving at Higher level and Working with Others at Intermediate 1 level 3.3 General Aims of the SQA Advanced Diploma in Electrical Engineering The same as for the SQA Advanced Certificate in Electrical Engineering award but with the addition of the following: 3.3.1 develop candidates' knowledge and skills in planning and project management 3.3.2 develop investigation skills 3.4 Specific Aims of the SQA Advanced Diploma in Electrical Engineering The same as for the SQA Advanced Certificate in Electrical Engineering award but with the addition of the following: 3.4.1 develop an award that on successful completion will allow candidates' to progress to a degree in Electrical Engineering or related subject discipline area SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 9 The development of this new SQA Advanced Diploma award will also allow candidates to: 3.4.2 develop knowledge and understanding of the external and internal factors that influence the performance of modern companies 3.4.3 recognise the important role continuing professional development plays in career development 3.4.4 expand on the range of knowledge, understanding and skills in core electrical principles, electrical machines and systems and electrical installation 3.4.5 allow for further specialisation within the following subject areas: Inspection and Testing of Low Voltage Installations, Programmable Logic Controllers, Electrical Systems in Hazardous Environments, Analogue and Digital Electronics, Quality Management, Electrical Installation Skills, Industrial Plant Maintenance, Synchronous Machines, Electrical Motor Drive Systems, Three Phase Induction Motors, High Level Engineering Software, additional Control Systems studies, Power Supply Circuits, Switchgear and Protection, Standby Systems, Electrical Installation Design: Computer Aided, advanced Mathematical studies and Employment Experience 3.4.6 on successful completion of the award, achieve the Core Skills in Communication at Higher level, Information Technology at Higher level, Problem Solving at Higher level and the Using Number component of the Core Skill Numeracy at Higher level. Candidates will be provided with opportunities to develop the Core Skill Using Graphical Information component of the Numeracy Core Skill at Higher level and the Working with Others Core Skills at Intermediate 1 level SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 10 3.5 How the General Aims are met in the SQA Advanced Certificate and SQA Advanced Diploma Award Structures and Content Aim no. How it is met in SQA Advanced Certificate and SQA Advanced Diploma 3.1.1 For many years, SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering qualifications have equipped candidates to seek employment in a wide range of manufacturing, service and public sector organisations. Market research indicates that SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering Electrical Engineering awards are still regarded as the minimum qualifications required by many organisations to work at electrical technician or incorporated engineer level. 3.1.2 There has been a long tradition of candidates in employment taking SQA Advanced Certificate in Electrical and Electronic awards on a part-time basis to increase their knowledge of Electrical and Electronic Engineering and enhance their career development. In recent years, with increased commonality between SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and greater flexibility in the way these awards are delivered, candidates in employment have increasingly taken SQA Advanced Diplomas on a part-time basis to expand their knowledge and skills in Electrical and Electronic Engineering and improve their career prospects. The two new awards contain a balance of core principles and up-to-date knowledge and skills in Electrical Engineering which lends themselves to the Continuous Professional Development and career development of candidates working at electrical technician and incorporated engineer levels. Furthermore, the award structures have been designed to allow for easy progression between SQA Advanced Certificate and SQA Advanced Diploma awards. 3.1.3 All units within the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards have been levelled at SCQF levels 6, 7 or 8. The two new awards also conform to the SQA levelling requirements for SQA Advanced Certificate and SQA Advanced Diploma awards. Thus, successful completion of one or both awards will allow progression within the SCQF. 3.1.4 The nature of Electrical Engineering as a discipline lends itself to both the analysis and synthesis of problems. For example, when a complex electrical and electronic system is analysed (using, say, a block diagram approach) by breaking it down into separate functional parts or alternatively the synthesis of a complex system from simpler electrical and electronic systems. The two new awards allow these important skills to be developed further both in the technical subjects and in the core Communication, Information Technology and Business Awareness and Continuing Professional Development units. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 11 Aim no. How it is met in SQA Advanced Certificate and SQA Advanced Diploma 3.1.5 The new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards provide centres with an opportunity to enhance learning skills not least by creating opportunities for candidates to combine theory and practice to achieve a real understanding of a subject. For example, some units recommend significant use of practical work and/or computer simulation to reinforce learning. It is also anticipated that centres will use innovative delivery approaches that may make use of sophisticated electrical and electronic laboratory equipment and/or online delivery and/or Virtual Learning Environments to enhance candidate learning. By their very nature Engineering courses require the transfer of technical knowledge and skills form one area to another. For example, a significant level of Electrical Principles and Mathematics has been included in both SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards because these subjects provide underpinning knowledge, understanding and skills which are used elsewhere in both awards. Candidates will also have an opportunity to use the Communication and Information Technology knowledge and skills developed in the mandatory core units in other parts of the awards to support such activities as report writing, presentation and the application of specialist software packages. Core Skills in general, and problem solving in particular, have been regarded as very important by the SQA Advanced Electrical Development Team since it is recognised that a good level of competence in these is essential in the work of an incorporated electrical technician. 3.3.1 The double credit (16 SCQF points) Engineering Project Graded Unit in the SQA Advanced Diploma in Electrical Engineering award provides opportunities for candidates to develop both their planning and project management knowledge and skills. 3.3.2 The Business Awareness and Continuing Professional Development Unit provides candidates with the opportunities to develop their investigative skills by exploring the external and internal factors that affect the performance of a modern company and the different ways that people learn. The Engineering Project also requires candidates to undertake some investigations into the background to and a range of solutions for their engineering project. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 12 3.6 How the Specific Aims are met in the SQA Advanced Certificate and SQA Advanced Diploma Award Structures and Content Aim no. How it is met in SQA Advanced Certificate and SQA Advanced Diploma 3.2.1 An SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering award has been recognised for many years by employers and other stakeholders of these awards as appropriate qualifications for persons wishing to work at electrical technician or senior technician levels. Market research indicates that there is a growing demand for people with technician level skills in electrical and electronic engineering especially as companies automate a lot more of their processes. Thus, it is confidently anticipated that those achieving the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards will find employment as electrical technicians and incorporated electrical engineers in a wide range of small, medium and large companies. 3.2.2 & 3.2.3 An SQA Advanced Certificate and SQA Advanced Diploma in no longer satisfies fully the academic requirements for Incorporated Engineer status although these qualifications continue to completely satisfy Engineering Technician requirements. The minimum qualification for Incorporated Engineer is an ordinary degree. Given the clear progression routes that have been established between existing SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and degree courses by many FE colleges and universities, it is strongly anticipated that similar progression routes will also be developed between the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and degree courses. Thus, SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards will continue to form very important 'stepping stones' towards candidates achieving degrees (and, thus, satisfy fully the academic requirements for Incorporated Engineer status). Progression arrangements between SQA Advanced Certificates, SQA Advanced Diplomas and degrees can only be strengthened with the full implementation of the SCQF. Seven letters have been received from Scottish Universities confirming articulation arrangements between the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and degree programmes. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 13 4 Recommended entry to the qualification(s) 4.1 Access requirements Entry to this qualification is at the discretion of the centre. The following information on prior knowledge, skills, experience, or qualifications that provide suitable preparation for this qualification has been provided by the Qualification Design Team as guidance only. Learners would benefit from having attained the skills, knowledge, and understanding required by one or more of the following or equivalent qualifications and/or experience: • One Higher from Physics, Technological Studies or Higher Mathematics and at least three Standard Grades 1-2/ Intermediate 2 passes including Mathematics, Physics/Technological Studies and English. • National Certificate Group Award in Electrical Engineering or Electronic Engineering. • Qualification comparable to the above, gained through other awarding bodies such as GSCE, City & Guilds, Edexcel etc. • At the discretion of the Principal of the presenting centre for applicants with a different experiential background who could benefit from taking the award(s) or units within the award(s), eg adult returners, overseas students with relevant work and/or work experience. 4.2 Alternative access arrangements The presenting centre may operate alternative access arrangements in cases where the candidate is convinced that she/he already has the required competences in a given area. These arrangements are as follows: • assessment on demand • credit transfer • accreditation of prior learning • relevant work experience Individual presenting centres will require to outline their systems for each of these as a part of any approval procedure. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 14 5 Structure of the qualifications This qualification was designed to meet a specific purpose and what follows are details on how that purpose has been met through mapping of the units to the aims of the qualification. Through meeting the aims, additional value has been achieved by linking the unit standards with those defined in National Occupational Standards and/or trade/professional body requirements. In addition, significant opportunities exist for learners to develop more generic skills, known as Core Skills, through this qualification. 5.1 SQA Advanced Certificate in Electrical Engineering Structure: GP6D 47 — 12 unit credits Mandatory units (9.0 credits required) Unit no. Unit title Credit value SCQF level HP4A 47* Communication: Practical Skills 1 7 HP48 46* Engineering Mathematics 1 1 6 HT7K 47 Three Phase Systems 1 7 HV3L 47 Electricity Power Systems 1 7 HT83 47 Electrical Machine Principles 2 7 HV3A 47 Electrical Safety 1 7 HP46 47 DC and AC Principles 1 7 HV2H 46 Application of Electrical and Electronic Instruments 1 6 SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 15 Optional units (2.0 credits required) Unit no. Unit title Credit value SCQF level HP3J 47 Electrical Networks and Resonance 1 7 HP6L 47 Information Technology: Applications Software 1 1 7 HT1W 47 Power Electronics 1 7 HV2L 47 Inspection and Testing of Low Voltage Electrical Installations 1 7 HT1K 47 Applications of Programmable Logic Controllers 1 7 HV3K 47 Electrical Systems in Potentially Explosive and Gas Hazardous Environments 1 7 HT1R 47 Fundamentals of Control Systems and Transducers 1 7 HP49 47* Engineering Mathematics 2 1 7 HV3M 47 Electrical Installation Skills 1 7 HV3G 48 Three Phase Induction Motors 1 8 HT7A 47 Quality Management: An Introduction 1 7 HP6M 47 Personal Development Planning 1 7 HR1C 46* Workplace Communication in English 1 6 J1PL 47 Promoting Energy Efficiency in the Workplace 1 7 HV2W 47 Electrical Design Systems: An Introduction 1 7 HV2X 47 Electrical Installation Design (Computer Aided): An Introduction 1 7 HT1Y 47* Energy Overview 1 7 J1CH 47* Computer Programming 1 7 J1S1 47* Data Security 1 7 *Refer to History of Changes for revision changes. Graded Unit (1.0 credit) Unit no. Unit title Credit value SCQF level HV4C 47 Electrical Engineering: Graded Unit 1 (Examination) 1 7 SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 16 5.2 SQA Advanced Diploma in Electrical Engineering Structure: GP6C 48 — 30 unit credits Mandatory units (20.0 credits required) Unit no. Unit title Credit value SCQF level HP4A 47* Communication: Practical Skills 1 7 HP6L 47 Information Technology: Applications Software 1 1 7 HP3H 48 Business Awareness and Continuing Professional Development 1 8 HP48 46* Engineering Mathematics 1 1 6 HP46 47 DC and AC Principles 1 7 HT7K 47 Three Phase Systems 1 7 HV3L 47 Electricity Power Systems 1 7 HT83 47 Electrical Machine Principles 2 7 HV3A 47 Electrical Safety 1 7 HV2H 46 Application of Electrical and Electronic Instruments 1 6 HP3J 47 Electrical Networks and Resonance 1 7 HT1W 47 Power Electronics 1 7 HT1R 47 Fundamentals of Control Systems and Transducers 1 7 HP49 47* Engineering Mathematics 2 1 7 HT1H 48 Transmission Lines and Complex Waves 1 8 HV5X 48 Electrical Installation Design 1 8 HT7M 48 Electrical Motor Drive Systems 1 8 HV4X 48 Transformers 1 8 HV4Y 48 Utilisation of Electrical Energy in Buildings 1 8 *Refer to History of Changes for revision changes. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 17 Optional units (7.0 credits required) Unit no. Unit title Credit value SCQF level HV2L 47 Inspection and Testing of Low Voltage Electrical Installations 1 7 HT1K 47 Applications of Programmable Logic Controllers 1 7 HV3K 47 Electrical Systems in Potentially Explosive and Gas Hazardous Environments 1 7 HT7J 46 Analogue Electronics: An Introduction 1 6 HT7L 47 Digital Electronics 1 7 HT7A 47 Quality Management: An Introduction 1 7 HV3M 47 Electrical Installation Skills 1 7 HV2K 47 Industrial Plant Maintenance 1 7 HP41 47 High Level Engineering Software 1 7 HV51 48 Control Systems Behaviour 1 8 HT1E 48 Mathematics for Engineering 3 2 8 HP3T 48 Power Supply Circuits 1 8 HV4V 48 Switchgear and Protection of High Voltage Systems 1 8 HV50 48 Applications of Power Electronics in Electrical Motor Drive Systems 1 8 HV3G 48 Three Phase Induction Motors 1 8 HV4W 48 Synchronous Machines 1 8 HV53 48 Electrical Standby Systems 1 8 HV52 48 Electrical Installation Design: Computer Aided 1 8 HP6M 47 Personal Development Planning 1 8 HR1C 46* Workplace Communication in English 1 6 J1PL 47 Promoting Energy Efficiency in the Workplace 1 7 HV2W 47 Electrical Design Systems – An Introduction 1 7 HV2X 47 Electrical Installation Design (Computer Aided): An Introduction 1 7 HT7H 47* Project Management: An Introduction 1 7 HT1M 47* Engineering Mathematics 3 1 7 HT03 48* Engineering Mathematics 4 1 8 HT1N 48* Engineering Mathematics 5 1 8 HR0M 47 Work Role Effectiveness OR 3 7 HR0P 48 Work Role Effectiveness 3 8 HP47 47 Analogue Electronic Principles 2 7 HP3G 47 Combinational Logic 1 7 HP3Y 47 Sequential Logic 1 7 HP42 47 MCU/MPU Assembly Language Programming 1 7 HT1Y 47* Energy Overview 1 7 HT1L 48* Energy Technologies 1 8 J1CH 47* Computer Programming 1 7 J1S1 47* Data Security 1 7 *Refer to History of Changes for revision changes. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 18 Graded unit (3.0 credits required) Unit no. Unit title Credit value SCQF level HV4C 47 Electrical Engineering: Graded Unit 1 (Examination) 1 7 J1RC 48 Electrical Engineering: Graded Unit 2 (Project) 2 8 5.3 Graded Units The purpose of the Graded Unit for both the SQA Advanced Certificate and SQA Advanced Diploma awards is to assess the candidate's ability to apply and integrate knowledge and/or skills gained within individual units. By this means candidates will demonstrate that they have achieved the specific aims of the awards as detailed in Sections 3.2 and 3.4. The Graded Units also provide the means by which a candidate's achievement can be graded. SQA Advanced Certificate in Electrical Engineering candidates will undertake a one Credit Graded Unit at level 7. This will be in the form of a 3-hour written examination. SQA Advanced Diploma in Electrical Engineering candidates will also do the SQA Advanced Certificate Graded Unit but, in addition, will undertake a two Credit Graded Unit at level 8. This will take the form of a practical assignment/project. 5.3.1 Types of Graded Units SQA Advanced Certificate in Electrical Engineering: Graded Unit 1 — Examination It will be noted that the Graded Unit draws on Outcomes in the mandatory section of the award which are studied by all SQA Advanced Certificate in Electrical Engineering candidates. The assessment for the Electrical Engineering: Graded Unit 1 consists of an examination paper which should last three hours. It is recommended that candidates do not sit the Graded Unit examination until the end of the SQA Advanced Certificate (1st Year of the SQA Advanced Diploma), given the range of units that it draws from. SQA Advanced Diploma Electrical Engineering: Graded Unit 2 — Project The nature of the project activity is such that it is likely that centres will wish their candidates to embark on it from the start of the second year of the SQA Advanced Diploma in Electrical Engineering programme. As it is anticipated that centres will deliver the SQA Advanced Certificate in Electrical Engineering as part of the first year of the SQA Advanced Diploma, it is recommended that candidates have completed all SQA Advanced Certificate in Electrical Engineering units, including the SQA Advanced Certificate Graded Unit, before commencing the project. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 19 In principle, the project can draw on any units in the SQA Advanced Diploma in Electrical Engineering framework although the majority of units should be at SCQF level 8. The project can be taken from one Electrical Engineering area (eg Electrical Machines) or it can span more than one technical area. However, its principal purpose is not to integrate technical content (this is covered in Electrical Engineering: Graded Unit 1) but rather to combine such knowledge and skills as planning, construction, testing, evaluating and reporting. 5.3.2 Rationale for the Graded Units Assessment The assessment methods ie an examination for Graded Unit 1 and a project for Graded Unit 2 were decided through consultation with industry and delivering centres during initial consultation on the overarching SQA Advanced Engineering Framework (see SQA Advanced Certificate and SQA Advanced Diploma in Electronics Validation Document for more details). The consultation indicated that an 'examination' provided a more accurate way of assessing candidates' abilities to apply and integrate knowledge and understanding from various technical and related areas, such as Communication. Furthermore, it was considered that during their SQA Advanced Certificate studies candidates will not normally develop fully the necessary knowledge and skills to complete a project. A project was preferred at the SQA Advanced Diploma level because a project-based assignment provides candidates with opportunities to demonstrate not only their knowledge and skills in a technical area(s) but also in areas such as planning, construction, testing, evaluating and reporting which are important aims within the SQA Advanced Diploma in Electrical Engineering award. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 20 5.4 Core Skills The SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards have been designed using the new SQA Advanced Design Principles and therefore the importance of Core Skills has been recognised and been incorporated, where appropriate, throughout the awards. 5.4.1 SQA Advanced Certificate in Electrical Engineering Core Skills Exit Profile A candidate who successfully achieves an SQA Advanced Certificate in Electrical Engineering will automatically obtain the following Core Skills exit profile: • Communication Higher (fully embedded in the unit Communication: Practical Skills) • Numeracy Using Number component of Numeracy Core Skill at Higher (embedded in the unit Mathematics for Engineering 1: Electronics and Electrical) Core Skills Entry Profile Given the information on Core Skills provided in the previous section the following candidate Core Skills entry profile is recommended: • Communication Intermediate 2 • Information Technology Intermediate 2 • Numeracy Intermediate 2 • Problem Solving Intermediate 2 • Working with Others Intermediate 1 Unit writers have also identified in individual units opportunities to develop Core Skills. These development opportunities are summarised in Figure 5.4.1. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 21 Figure 5.4.2 SQA Advanced Electrical Units — Core Skills Development Opportunities Note 1: Units that were originally developed as part of the new SQA Advanced Certificate/Diploma in Electronics awards are not shown in this table. Refer to the new SQA Advanced Certificate/Diploma in Electronics Arrangements Document and the individual unit specifications for the Core Skills development opportunities. Note 2: CT = Critical Thinking: P&O = Planning & Organisation and R and E = Reviewing & Evaluating Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Three Phase Systems (HT7K 47) Higher Higher Higher Electricity Power Systems (HV3L 47) Higher Higher Higher Higher Higher Higher Electrical Machine Principles (HT83 47) Higher Higher Intermediate 1 Working co- operatively with others in a group when analysing constructional features of machines and when undertaking laboratory work SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 22 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Electrical Safety (HV3A 47) Higher Reading complex Health & Safety docum- entation Int 1 Com- pleting work permit Higher Intermediate 2 Work with others in a role play scenario: eg issuing a Permit to Work, identifying risk factors Application of Electrical and Electronic Instruments (HV2H 46) Higher Int 2 Int 2 Searching for manufacturers' data on instruments on the Internet Int 2 Int 2 SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 23 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Power Electronics (HT1W 47) Higher Higher Higher Int 2 Simulation of circuits plus search of manufacturers' data on power electronic devices Higher Int 2 Fundamentals of Control Systems and Transducers (HT1R 47) Higher Higher Higher Higher Int 1 Opportunities to work in groups for laboratory investigations Electrical Installation Design (HV5X 48) Higher Higher Higher Int 2 Higher Higher Int 2 Scope for Working with Others within Installation Learning Design Exercises (eg planning and organising role) Electrical Motor Drive Systems (HT7M 48) Higher Higher Higher Higher SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 24 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Transformers (HV4X 48) Higher Higher Higher Higher Utilisation of Electrical Energy in Buildings (HV4Y 48) Higher Higher Higher Higher Higher Highe r Higher Inspection and Testing of Low Voltage Electrical Installations (HV2L 47) Higher Int 2 Higher Int 2 Int 2 Electrical Systems in Potentially Explosive and Gas Hazardous Environments (HV3K 47) Higher Int 2 Searching on the Internet for manufacturers' data on apparatus to provide explosion protection or intrinsically safe equipment Higher SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 25 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Analogue Electronics: An Introduction (HT7J 46) Int 2 Int 2 Int 2 Int 2 Simulation of circuits plus search of manufacturers' data on electronic devices Int 2 Int 1 Opportunities to work in groups for laboratory investigations Digital Electronics (HT7L 47) Int 2 Int 1 Int 2 Int 2 Simulation of circuits plus search of manufacturers' data on electronic devices Int 2 Int 1 Opportunities to work in groups for laboratory investigations Quality Management: An Introduction (HT7A 47) Int 2 Int 2 Higher Control Systems Behaviour (HV51 48) Higher Higher Higher Higher Higher Higher Higher Switchgear and Protection of High Voltage Systems (HV4V 48) Higher Higher Higher Higher SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 26 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Applications of Power Electronics in Electrical Motor Drive Systems (HV50 48) Higher Higher Higher Int 2 Opportunities to search on the Internet for manufacturers' information Higher Highe r Higher Three Phase Induction Motors (HV3G 48) Higher Higher Higher Higher Higher Highe r Higher Synchronous Machines (HV4W 48) Higher Higher Higher Int 2 Use of software packages to simulate synchronous machine operation Higher Higher Industrial Plant Maintenance (HV2K 47) Higher Higher Int 2 Use of CMSS software Higher Highe r Higher Int 1 Opportunities to work in groups to develop maintenance strategies for different scenarios SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 27 Unit title Communication Numeracy Information Technology Problem Solving Working with Others Read Write Oral Using Number Using Graphical Inform. Using Information Technology CT P&O R&E Working with Others Electrical Standby Systems (HV53 48) Higher Higher Int 2 Higher Int 2 Opportunities to search on the Internet for manufacturers' information Higher Higher Electrical Installation Skills (HV3M 47) Int 1 Int 2 Electrical Installation Design: Computer Aided (HV52 48) Higher Higher Higher Higher Higher Highe r Int 1 Working in small groups for learning how to use the software SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 28 5.5 Conditions of the Award The conditions of award for SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering qualifications are as follows: 5.5.1 SQA Advanced Certificate in Electrical Engineering A candidate will be awarded SQA Advanced Certificate in Electrical Engineering on successful completion of 11 unit credits plus 1 Graded Unit based on the SQA Advanced Certificate in Electrical Engineering award structure shown in Section 5.1. More specifically this award structure requires that a candidate achieves the following: • the 1 unit credit Communication: Practical Skills within the mandatory section • the remaining eight unit credits from the mandatory section • two unit credits from the optional section • Electrical Engineering: Graded Unit 1 Examination 5.5.2 SQA Advanced Diploma in Electrical Engineering A candidate will be awarded SQA Advanced Diploma in Electrical Engineering on successful completion of 27 unit credits plus 3 Graded Unit Assessment credits based on the SQA Advanced Diploma in Electrical Engineering award structure shown in Section 5.2. More specifically this award structure requires that candidates achieve the following: • the 3 unit credits Communication: Practical Skills, Information Technology: Applications Software 1 and Business Awareness and Continuing Professional Development within the mandatory section • remaining 17 unit credits from the mandatory section • seven unit credits from the optional section • Electrical Engineering: Graded Unit 1 and Electrical Engineering: Graded Unit 5.6 SCQF levels Figures 5.6.1 and 5.6.2 show the distribution of SCQF levels in the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards respectively in the mandatory sections. It can be seen from Figure 5.6.1 that all units in the SQA Advanced Certificate Electrical Engineering mandatory section are at level 7 except for two, the Mathematics for Engineering 1: Electronic and Electrical Unit and the Application of Electrical and Electronic Instruments Unit, which are both at level 6. The Table shows that the number of SCQF level 7 units substantially exceeds the minimum of 48 SCQF credit points required to be in an SQA Advanced Certificate to satisfy the new SQA Advanced Design Principles. From the outset of developments, the SQA Advanced Electrical Development Team recognised that the level of Mathematics achieved by the average candidate entering the current SQA Advanced Certificate in Engineering: Electrical award was around Intermediate 2 (Standard Grade Credit level) and there was a need to include a SCQF level 6 Mathematics Unit in the SQA Advanced Certificate] (and the first year of the SQA Advanced Diploma in Electrical Engineering) which consolidated candidates' existing SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 29 knowledge and understanding of Mathematics particularly in the areas of transposing and solving equations and trigonometry, skills that are so important in the field of Electrical Engineering. The Application of Electrical and Electronic Instruments Unit was originally levelled at SCQF level 7, but was relevelled at SCQF level 6 as a result of the validation process. As noted above, the SQA Advanced Electrical Development Team has levelled the remaining units in the mandatory section of the SQA Advanced Certificate in Electrical Engineering at SCQF level 7. The SQA Advanced Electrical Development Team used as their benchmarks for levelling, the Highers in Electrical and Electronic Engineering and various NQ Electronic and Electrical Engineering units and their knowledge of the content of existing degree courses in Electronic and Electrical Engineering. It can be seen from Figure 5.6.2 that the minimum number of SCQF level 8 units a candidate has to take in the SQA Advanced Diploma in Electrical Engineering is 64 SCQF credit points which meets the minimum requirement of 64 SCQF credit points as stated in the SQA Advanced Design Principles. However, it is anticipated that most candidates will undertake some optional units at level 8 which will mean that they will comfortably exceed this minimum requirement. The case for the two level 6 units in the SQA Advanced Diploma in Electrical Engineering has already been presented above. A number of the SCQF level 8 units in the SQA Advanced Diploma follow on from corresponding level 7 units and are, therefore, appropriately levelled at SCQF level 8. The SQA Advanced Electrical Development Team also used their knowledge of existing second year degree courses to level units in the SQA Advanced Diploma in Electrical Engineering award. Figure 5.6.1 Distribution of SCQF levels in the SQA Advanced Certificate in Electrical Engineering Level 6 Level 7 Level 8 Totals SQA Minimum Requirements for level 7 units 16 SCQF c.p. 64 SCQF c.p. 0 SCQF c.p. 80 48 SCQF c.p. c.p. = credit points Figure 5.6.2 Distribution of SCQF levels in the SQA Advanced Diploma in Electrical Engineering Level 6 Level 7 Level 8 Totals SQA Minimum Requirements for level 7 units 16 SCQF c.p. 104 SCQF c.p. 64 SCQF c.p. 184 64 SCQF c.p. c.p. = credit points SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 30 6 Approaches to delivery and assessment 6.1 Content and context Throughout the design and development of the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards the SQA Advanced Electrical Development Team has placed a high priority on producing awards that allow candidates to develop appropriate technical and practical skills. As indicated earlier, it is not possible to quantify such technical and practice skills in exact detail. However, the Development Team has taken the view that the best way to prepare candidates to meet the changing technical and practical requirements of the modern Electrical industry is to ensure candidates have a solid foundation of theory and practice upon which they can build new knowledge, understanding and skills. Thus, the mandatory section of the SQA Advanced Certificate in Electrical Engineering contains fundamental studies in Electrical Principles, Electrical Machines, Power Systems, Electrical Safety and Application of Instruments. The SQA Advanced Diploma in Electrical mandatory section builds on and extends these studies. The studies in Electrical Engineering are underpinned by the inclusion of a core Mathematics Unit in the SQA Advanced Certificate and two core Mathematics units in the SQA Advanced Diploma. The SQA Advanced in Electrical Development Team believes that a good grasp of mathematics is essential to the understanding of Electrical Engineering. The optional sections of both the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering provide candidates with the opportunity to specialise in technical and/or non-technical subjects. In line with normal good practice centres are encouraged to advise candidates to choose those options that best meet their future career and educational aspirations. The SQA Advanced Electrical Development Team has also ensured that the two new awards contain opportunities for candidates to develop a range of related skills which would make the holder of the awards better prepared for employment and/or degree studies. For example, the Communication: Practical Skills Unit has been included within the mandatory sections of both SQA Advanced Certificate and SQA Advanced Diploma awards to provide candidates with the opportunity to develop their written and group discussion skills about complex vocational issues. While a discrete Information Technology unit is no longer included within the SQA Advanced Certificate mandatory section centres will still have the opportunity to access such a unit via the optional section of the SQA Advanced Certificate (Information Technology: Applications Software 1). Even where centres choose not to select this unit from the optional section there are a number of opportunities to develop Information Technology knowledge and skills within individual units. The Information Technology: Applications Software 1 unit has been included within the core of the SQA Advanced Diploma to allow centres to concentrate on business applications, such as word processing, spreadsheets, databases, or engineering specific applications or a combination of the two. A new type of Business Studies unit, entitled Business Awareness and Continuing Professional Development, has been included within the mandatory section of the SQA SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 31 Advanced Diploma in Electrical Engineering. This unit focuses on two areas which the SQA Advanced Electrical Development Team considered important to working in the modern electrical industry: namely the external and internal factors that affect business performance and the need for continuing learning and development if candidates are to have sustainable and rewarding employment in the future. 6.2 Delivery The new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards can be delivered on a full-time, block-release, part-time day or part- time evening basis. In timetabling the two new awards, centre staff should take account of information contained in the recommended prior knowledge and skills statement in unit specifications in sequencing the delivery of units. For example, the Single Phase AC Circuits unit would normally be delivered before the Electrical Networks and Resonance. Examples of a full- time SQA Advanced Certificate in Electrical Engineering and 2nd Year SQA Advanced Diploma in Electrical Engineering timetables are shown in Appendix 1. One of the key reasons the SQA Advanced Electrical Development Team has sought to reduce the time candidates have to spend on summative unit assessment is to provide lecturers with more time to deliver units. Lecturers are encouraged, in particular, to use this additional time to reinforce learning in core electrical principles and technologies and enhance the development of candidates' practical electrical skills. Lecturers may use a variety of teaching and learning approaches in delivering the units in the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards. These may include lecturing, group work, laboratory and practical work, computer simulation (using appropriate software packages), project work and case studies. The use of open and distance learning and online materials may help to supplement and support the learning that takes place in the classroom, laboratory or workshop. Industrial visits are encouraged wherever possible to provide 'real life' industrial examples of the application of the theory and practice learned in the classroom, laboratory or workshop. The SQA Advanced Electrical Development Team recognises the very important role computer simulation, such as electrical installation software, plays in the modern electrical industry. The Team would actively encourage the use of computer simulation wherever appropriate but not at the expense of candidates doing practical work. The Team believe it is very important that candidates get as much exposure as possible to practical electrical hand skills, the use of electrical and electronic test equipment and other practical electrical activities if they are to be suitably prepared to work in industry. Lecturers should also seek opportunities to integrate Core Skills within their teaching and learning programmes. Such opportunities may include the following: SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 32 Communication • Providing candidates opportunities to develop their oral skills by allowing them to give full answers to questions asked by the lecturer and by giving an oral presentation in the SQA Advanced Diploma in Electrical Engineering Graded Unit project • Develop complex, vocationally specific reading skills (eg Electrical Safety, Industrial Plant Maintenance etc) • Develop report writing skills in a number of units (eg Electrical Power Systems, Three Phase Induction Motors etc) • Allowing candidates to develop their Communication skills in group work activities (eg Communication: Practical Skills, Electrical Safety) Numeracy • Reinforcing Numeracy and Mathematical skills when teaching electrical engineering topics (eg Electrical Machine Principles, Electrical Networks and Resonance, Synchronous Machines etc) • Reinforcing Using Graphical information skills by use of a range of graphical representations (eg Power Electronics, Fundamentals of Control Systems and Transducers etc) Information Technology • Develop Information Technology skills through the application of IT within an Electrical Engineering context (eg Control Systems Behaviour, Electrical Installation Design: Computer Aided etc) Problem Solving Skills • Develop Critical Thinking Skills through the application of electrical engineering principles and technologies to solve electrical engineering problems • Develop Planning and Organisational skills (eg Utilisation of Electrical Energy in Buildings, Industrial Plant Maintenance etc) • Develop reviewing and evaluation skills through, for example, the review and evaluation of the Outcomes of assignments and project work (eg Applications of Power Electronics in Electrical Motor Drive Systems, Electrical Standby Systems etc) Working with Others • Develop Working with Others skills through group discussion on the solution to electrical engineering problems (eg Electrical Safety — role play scenario: eg issuing a Permit to Work, identifying risk factors) and laboratory and project work (eg Analogue Electronics: An Introduction, Digital Electronics etc) 6.3 Assessment From the outset of developments the SQA Advanced Electrical Development Team recognised the need to have an appropriate assessment strategy in place for the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards. Such a strategy was developed and is shown below: SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 33 Aims To ensure that: (1) consistent, rigorous and efficient approaches are adopted to the development and administration of SQA Advanced Electrical Engineering assessment instruments at both Unit and Graded Unit levels, which satisfy nationally agreed standards (2) the assessment load on candidates and staff is sensible and that assessment does not unduly detract from teaching and learning (3) as far as possible reliable and rigorous moderation processes are put in place in order to ensure that consistent national standards are achieved for all SQA Advanced Electrical Engineering assessments Objectives Listed below are the measures that have been put in place to meet the aims: (1) Develop nationally at least one assessment exemplar pack for each mandatory unit, which clearly sets out the standards of assessment expected in the unit. (2) Adopt a holistic approach to unit assessment. The implications of this are as follows: (i) Assessment instruments will normally be designed only to sample knowledge and skills in a unit (this is consistent with the new SQA Advanced Unit format). (ii) A unit assessment strategy will be adopted, where possible, to produce a single assessment instrument for the whole unit. Where this is not possible the assessment strategy will seek to ensure that the minimum number of assessment instruments required are consistent with maintaining agreed national standards. (3) While not seeking to be entirely prescriptive with regard to the time spent on assessment in each SQA Advanced Unit, over assessment should be avoided. Assessment times are clearly stated in the individual unit specifications. (4) Produce assessment exemplar packs for the two Graded Units. For the Graded Unit examination produce at least one sample exam paper to show the standards expected in such a paper. Likewise, for the 2 Credit Graded Unit Electrical Engineering Project produce a set of materials which clearly set out the standards of candidate response required to achieve a Grade A and a Grade C. (5) Actively encourage centres to work in partnership in producing Graded Unit assessment materials, which meet nationally agreed standards reducing, in turn, the workload on staff in individual colleges. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 34 (6) Ensure that consistent and rigorous internal and external moderation procedures operate through both SQA Advanced Unit level and Integrative Assessment processes. This places a clear responsibility on both centres and the SQA. As far as has been practical the above objectives have been adhered to when developing assessment exemplar and Graded Unit materials. Assessment Loading Grid An Assessment Loading Grid showing the type and duration of assessment in each unit is shown in Appendix 2. It is hoped that course planners will find this grid helpful in timetabling the two awards. Assessment Exemplar Materials Assessment exemplar packs are in the process of being produced for all mandatory units, and the Graded Units in the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards. Graded Unit Assessment Exemplars It is recommended that candidates do not sit the Graded Unit examination until the end of the SQA Advanced Certificate (1st Year of the SQA Advanced Diploma) given the range of units that it draws from. It is recommended that, given the size and complexity of the project, that the Graded Unit project is started at the beginning of the second year of the SQA Advanced Diploma. Formative Assessment Formative assessment should be used throughout the delivery of units to reinforce learning, build candidates' confidence and prepare candidates for summative assessment. 6.4 Re-assessment The way in which centres reassess candidates is integral to the way they manage the award assessment process as a whole. Re-assessment should be subject to rigorous internal moderation in exactly the same way as assessment is. Candidates may require to be reassessed on only a part of an assessment where their evidence has been generated over a period of time and/or a discrete part of the unit, such as an Outcome, has been assessed originally. On other occasions in may not be possible to reassess candidates on parts of their performance which are unsatisfactory. Situations where candidates may have to re-do a whole assessment include: • assessments which test knowledge and understanding and where it may not be possible to extract some of the items for re-assessment purposes • where parts of several Outcomes are involved SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 35 • where a project has been designed as an integral assessment and where there is requirement to complete the project as a single complex task Re-assessment Opportunities Re-assessment should operate in accordance with a centre's assessment policy and the professional judgement of the assessor. SQA advises that there should normally be one, or in exceptional circumstances two, re-assessment opportunities. Please refer to SQA's Guide to Assessment and Quality Assurance for Colleges of Further Education, August 2003 revisions. Developing Alternative Assessments The design of original assessments should inform the re-assessment process to a large extent, as the original determines the type of assessment instruments used and the purpose of the assessment. It is normal practice for centres to build up a bank of assessments which can be used in whole or in part for re-assessment purposes. Assessment writers should always refer to the unit specification when developing an alternative assessment to ensure that it is of equal demand to the original assessment and that it covers all the necessary criteria. Where candidates have not provided satisfactory evidence for knowledge and/or skills items which have been sampled, they should be reassessed on a different sample. Re-assessing SQA Advanced Graded Units Re-assessment of the Electrical Engineering: Graded Unit 1 should be based on an alternative examination paper. Re-assessment of Electrical Engineering: Graded Unit 2 should normally entail a candidate undertaking a completely new project. Where a candidate marginally fails the Electrical Engineering: Graded Unit 2 the centre may wish to reassess her/him on that part(s) of the performance which was unsatisfactory. Such re-assessment would be at the discretion of the centre and should be subject to rigorous internal moderation. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 36 7 General information for centres 7.1 Equality and inclusion The unit specifications making up this group award have been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners will be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence. Further advice can be found on our website www.sqa.org.uk/assessmentarrangements. 7.2 Internal and external verification All instruments of assessment used within these group awards should be internally verified using the appropriate policy within the centre and the guidelines set by SQA. External verification will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications. Further information on internal and external verification can be found in SQA's Guide to Assessment (www.sqa.org.uk). 7.3 Assessment moderation All assessment instruments used within the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards should be internally moderated, including assessment exemplar materials, using appropriate policies within the centre and guidelines provided by SQA. This will ensure the validity and reliability of the instruments of assessment used within the centre. External moderation will be carried out by SQA to ensure that internal assessment is within the national guidelines for these qualifications. For further information on internal and external moderation refer to the SQA Guide to Assessment and Quality Assurance for Colleges of Further Education, August 2003 revision. 7.4 Open and Distance Learning Advice on the use of open and distance learning is given in individual unit specifications. However, where it is used with regard to assessment, planning would be required by the centre concerned to ensure the sufficiency and authenticity of candidate evidence. Arrangement would be required to be put in place to ensure that the assessment or assessments were conducted under the conditions specified in the unit specification. For example, in the case of a unit which involved a unit end test a centre would have to make arrangements for the test to be conducted under SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 37 controlled, supervised conditions. Likewise, where a unit involves a practical based assessment, a centre would have to make arrangements for candidates to come into the centre to undertake the assessment under the conditions specified in the unit specification. It should be noted that the same requirements as specified in the previous paragraph apply where part or all of a unit is delivered online. 7.5 General information for candidates The new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards have been designed by an expert team of educators and industrialists with a view to allowing you to meet the educational requirements to work as an electrical incorporated engineer. The two new qualifications contain up-to-date and relevant electrical subject content and skills and have also been designed to satisfy the new SQA Higher National Design Principles. The SQA Advanced Electrical Development Team has designed the two new awards so that you will have opportunities to learn and understand the core principles and technologies that underpin Electrical Engineering. Learning these will be essential in providing you with a platform for tackling many electrical tasks and in allowing you to develop a more in-depth knowledge of Electrical Engineering. At the same time studying the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards will provide you with opportunities to develop sound practical electrical investigation, construction, testing and project skills which are critical to being a good electrical technician and/or incorporated engineer. As well as studying Electrical subjects you will also take Communication with an option to do Information Technology as part of the SQA Advanced Certificate. Good Communication skills are essential to understanding technical material, and when communicating with others whether on an individual basis or when working as part of a team. Information Technology underpins much of the work in Electrical Engineering whether this is through computer simulation of electrical and electronic circuits or systems or in preparing a written report on the work you have been involved in. Opportunities to develop Information Technology knowledge and skills are available in a number of units in the SQA Advanced Certificate, but an optional unit on Information Technology Applications is also available if you wish to consolidate your skills in this area. The Communication and Information Technology units are mandatory within the SQA Advanced Diploma in Electrical Engineering award although you will not need to study these units if you have already done so as part of the SQA Advanced Certificate. There is an additional mandatory core unit in the SQA Advanced Diploma in Electrical Engineering award entitled Business Awareness and Continuing Professional Development. This unit will provide you with an awareness of the business pressures on modern electrical companies and what strategies they are adopting to meet these pressures. The unit will also provide you with the opportunity to develop your own career and education action plan for the next five years or so. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 38 As already mentioned Electrical Engineering is very much about learning and understanding core principles and technologies while also doing practical work such as constructing and testing circuits and project work. Thus, while taking the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards you can anticipate that the teaching and learning approaches adopted by your lecturers will include the following: lecturing, group work, practical electrical and electronics work, inspection and testing, computer simulation of circuits and installations and project work. The Electrical Development Team has ensured that assessments in the two awards meet national standards. The two awards have been designed to optimise assessment so that sufficient time is available for you to learn the electrical principles and technologies and the practical skills that are essential to being a good electrical technician and incorporated engineer. You can expect to do assessment at individual unit level and at qualification level. At unit level, assessment will consist of some form of written end test, or a combination of short written test and practical exercise or a purely practical exercise. Your lecturer should tell you at the start of the unit what form the unit assessment will take. In additional, to unit tests there will also be a 3-hour examination at SQA Advanced Certificate level and a 2-credit project at SQA Advanced Diploma level. Both these assessments have been designed to allow you to demonstrate your ability to integrate knowledge, understanding and skills learned in the two awards as a whole. The SQA Advanced Electrical Development Team does not wish to place any artificial barriers in the way of potential candidates wanting to study the two awards. However, it would be unfair to enrol a candidate into the SQA Advanced Certificate and SQA Advanced Diploma who did not have a realistic chance of successfully achieving either or both awards. The SQA Advanced Electrical Development Team would therefore recommend that a candidate had one of the following qualifications before entering the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering: (1) One Higher from Physics, Technological Studies or Higher Mathematics and at least three Standard Grades 1-2/Intermediate 2 passes including Mathematics, Physics/Technological Studies and English. (2) A National Certificate in Electrical Engineering or Electronic Engineering. (3) Equivalent qualifications or experience to those shown in (1) and (2). An SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering award no longer satisfies the full academic requirements to become an incorporated engineer (a degree is now required). However, the new SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards provide a very solid platform for candidates to proceed to the advanced stages of a degree programme in Electrical Engineering. Ask your lecturer about progression arrangements your college has with any universities. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 39 7.6 Relationship to other awards An SQA Advanced Certificate and SQA Advanced Diploma in Electronics were validated in 2004. Since a number of units are common between SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering and Electronics awards candidates will have opportunities to transfer a significant number of units between the various awards. More limited opportunities will exist for candidates to transfer units between the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and awards in Mechanical Engineering, Manufacturing Systems, Mechatronics, General Engineering and Fabrication and Welding and vice versa. 7.7 Articulation arrangements All the universities in Scotland were contacted regarding possible articulation routes between the SQA Advanced Certificate and SQA Advanced Diploma in Electrical Engineering awards and degree courses offered by the universities. In general terms, universities indicated that they will allow candidates with an SQA Advanced Certificate to enter the first year of their electrical engineering (or related engineering) degree programmes. Candidates with an SQA Advanced Diploma will normally be allowed to enter the second year of a degree programme provided they have the unit, Mathematics for Engineering 3. 8 Glossary of terms Embedded Core Skills: The assessment evidence for the unit also includes full evidence for complete Core Skill or Core Skill components. A learner successfully completing the unit will be automatically certificated for the Core Skill. (This depends on the unit having been successfully audited and validated for Core Skills certification.) Finish date: The end of a group award's lapsing period is known as the finish date. After the finish date, the group award will no longer be live and the following applies: • Candidates may not be entered for the group award. • The group award will continue to exist only as an archive record on the Awards Processing System (APS). Graded unit: Graded units assess learners' ability to integrate what they have learned while working towards the units of the group award. Their purpose is to add value to the group award, making it more than the sum of its parts, and to encourage learners to retain and adapt their skills and knowledge. (Note to writer: delete if not applicable to product type). Lapsing date: When a group award is entered into its lapsing period, the following will apply: • The group award will be deleted from the relevant catalogue. • The group award specification will remain until the qualification reaches its finish date, at which point it will be removed from SQA's website and archived. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 40 • No new centres may be approved to offer the group award. • Centres should only enter candidates whom they expect to complete the group award during the defined lapsing period. SQA credit value: The credit value allocated to a unit gives an indication of the contribution the unit makes to an SQA group award. An SQA credit value of 1 given to an SQA unit represents approximately 40 hours of programmed learning, teaching, and assessment. SCQF: The Scottish Credit and Qualification Framework (SCQF) provides the national common framework for describing all relevant programmes of learning and qualifications in Scotland. SCQF terminology is used throughout this guide to refer to credits and levels. For further information on the SCQF, visit the SCQF website at www.scqf.org.uk. SCQF credit points: SCQF credit points provide a means of describing and comparing the amount of learning that is required to complete a qualification at a given level of the framework. One National Unit credit is equivalent to 6 SCQF credit points. One National Unit credit at Advanced Higher and one SQA Advanced Unit credit (irrespective of level) is equivalent to 8 SCQF credit points. SCQF levels: The level a qualification assigned within the framework is an indication of how hard it is to achieve. The SCQF covers 12 levels of learning. SQA Advanced Certificates and SQA Advanced Diplomas are available at SCQF levels 7 and 8, respectively. SQA Advanced units will normally be at levels 6–9 and graded units will be at level 7 and 8. National Qualification Group Awards are available at SCQF levels 2–6 and will normally be made up of National Units which are available from SCQF levels 2–7. Subject unit: These contain vocational/subject content and are designed to test a specific set of knowledge and skills. Signposted Core Skills: These refer to opportunities to develop Core Skills in learning and teaching, but are not automatically certificated. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 41 9 History of changes It is anticipated that changes will take place during the life of the qualification, and this section will record these changes. This document is the latest version and incorporates the changes summarised below. Centres are advised to check SQA Connect to confirm that they are using the most up-to-date qualification structure. NOTE: Where a unit is revised by another unit: • No new centres may be approved to offer the unit which has been revised. • Centres should only enter candidates for the unit which has been revised where they are expected to complete the unit before its finish date. Version number Description Date Acknowledgements SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced Qualifications. Further information Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our Centre Feedback Form SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 42 Appendix 1: SQA Advanced Certificate and SQA Advanced Diploma Timetables SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 43 SQA Advanced Certificate: Guidelines for the delivery of mandatory units (Also Year 1 of the SQA Advanced Diploma Award) Centre Year Block 1 Block 2 Block 3 Block 4 Unit Title Communication: Practical Skills Single Phase AC Circuits OR DC and AC Principles Three Phase Systems Electricity Power Systems Electrical Machine Principles Electrical Safety Mathematics for Engineering 1: Electronics and Electrical Application of Electrical and Electronic Instruments Electronic Instruments Electrical Engineering: Graded Unit 1 Option 1 Option 2 It is recognised that timetabling in a four block system is not done by every centre. The above grid is therefore only a guide indicating the order of delivery of units. The SQA Advanced Certificate units will normally make up the first year of the SQA Advanced Diploma timetable. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 44 SQA Advanced Certificate: Guidelines for the delivery of mandatory units (Year 2 of the SQA Advanced Diploma Award) Centre Year Block 1 Block 2 Block 3 Block 4 Unit Title IT: Applications Software Business Awareness and CPD Electrical Networks and Resonance Power Electronics Fundamentals of Control Systems and Transducers Mathematics for Engineering 2 Transmission Lines and Complex Waves Electrical Installation Design Electrical Motor Drive Systems Transformers Utilisation of Electrical Energy in Buildings As with the previous SQA Advanced Certificate grid, it is recognised that timetabling in a four block system is not done by every centre. The above grid is therefore only a guide indicating the order of delivery of units. Centres may wish to spread the delivery of units over more than one block which would allow more units to be delivered in parallel. Whichever delivery arrangement is used, it is important to complete the delivery of ALL the SQA Advanced Diploma units over the two years of a full- time programme. SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 45 Appendix 2: Assessment Loading Grid SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 46 SQA Advanced Certificate/SQA Advanced Diploma in Electrical Engineering Group Award Summary Assessment Loading: SQA Advanced Certificate in Electrical Engineering mandatory units Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HP4A 47 Communication: Practical Skills Summary/Evalu ation Assignment --- Business Document Assignment --- Spoken Communication Assignment --- HP48 46 Mathematics for Engineering 1: Electronics and Electrical Written Question Paper 1 hour 40 mins HP46 47 DC and AC Principles Written Question Paper 1 hour 30 mins HT7K 47 Three Phase Systems Written Question Paper 2 hours HV3L 47 Electricity Power Systems Industrial Assignment --- Written Question Paper 1 hour 30 mins HT83 47 Electrical Machine Principles Written Question Paper 2 hours Written Question Paper 2 hours HV3A 47 Electrical Safety Written Question Paper 1 hour 30 mins Permit to work Assignment --- HV2H 46 Application of Electrical and Electronic Instruments Written Question Paper 1 hour Practical Assignment & Report 6 hours HV4C 47 Electrical Engineering: Graded Unit 1 Examination (1 credit) 3 hours SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 47 Mandatory Section Assessment Summary: Eight Written Question Papers (Total assessment time = 13 hours 10 mins) + Graded Unit 1 (Total assessment time = 3 hours) + six assignments: SQA Advanced Certificate in Electrical Engineering optional units Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HP3J 47 Electrical Networks and Resonance Written Question Paper 1 hour 30 mins HP6L 47 Information Technology: Applications Software 1 Project/Case Study Assignment HT1W 47 Power Electronics Written Question Paper 1 hour 30 mins Laboratory exercise 1 hour 30 mins HV2L 47 Inspection and Testing of Low Voltage Electrical Installations Written Question Paper 1 hour 30 mins Practical Testing and Certification Assignment --- HT1K 47 Application of Programmable Logic Controllers Written Question Paper 1 hour 30 mins PLC Simulated Assignment --- HV3K 47 Electrical Systems in Potentially Explosive and Gas Hazardous Environments Written Question Paper 1 hour Written Question Paper 1 hour HT1R 47 Fundamentals of Control Systems and Transducers Written Question Paper 2 hours Laboratory exercise 2 hours HP49 47 Mathematics for Engineering 2 Written Question Paper 1 hour 30 mins HV3M 47 Electrical Installation Skills Identification/ Application Assignment --- Practical Assignment --- Practical Assignment --- HT7A 47 Quality Management: An Introduction Written Question Paper 1 hour Case Study Assignment --- Case Study Assignment 1 hour HV3G 48 Three Phase Induction Motors Written Question Paper 2 hours Assignment Report --- SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 48 SQA Advanced Diploma in Electrical Engineering mandatory units Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HP4A 47 Communication: Practical Skills Summary/Evaluation Assignment --- Business Document Assignment --- Spoken Communication Assignment --- HP6L 47 Information Technology: Applications Software 1 Project/Case Study Assignment --- HP3H 48 Business Awareness and Continuing Professional Development Case Study Assignment --- CPD Action Plan Assignment --- HP48 46 Mathematics for Engineering 1: Electronics and Electrical Written Question Paper 1 hour 40 mins HP46 47 DC and AC Principles Written Question Paper 1 hour 30 mins HT7K 47 Three Phase Systems Written Question Paper 2 hours HV3L 47 Electricity Power Systems Industrial Assignment --- Written Question Paper 1 hour 30 mins HT83 47 Electrical Machine Principles Written Question Paper 2 hours Written Question Paper 2 hours HV3A 47 Electrical Safety Written Question Paper 1 hour 30mins Permit to work Assignment --- HV2H 46 Application of Electrical and Electronic Instruments Written Question Paper 1 hour Practical Assignment and Report 6 hours HP3J 47 Electrical Networks and Resonance Written Question Paper 1 hour 30 mins SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 49 SQA Advanced Diploma in Electrical Engineering mandatory units (continued) Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HT1W 47 Power Electronics Written Question Paper 1 hour 30 mins Laboratory exercise 1 hour 30 mins HT1R 47 Fundamentals of Control Systems and Transducers Written Question Paper 2 hours Laboratory Exercise 2 hours HP49 47 Mathematics for Engineering 2 Written Question Paper 1 hour 30 mins HT1H 48 Transmission Lines and Complex Waves Written Question Paper 2 hours HV5X 48 Electrical Installation Design Written Question Paper 2 hours Project-based Assignment --- HT7M 48 Electrical Motor Drive Systems Written Question Paper 2 hours Investigation Assignment --- HV4X 48 Transformers Written Question Paper 2 hours Laboratory/Case Study Investigation Assignment 1 hour HV4Y 48 Utilisation of Electrical Energy in Buildings Design Scheme Assignment --- Design Scheme Assignment --- Design Scheme Assignment --- HV4C 47 Electrical Engineering: Graded Unit 1 Examination (1 credit) 3 hours J1RC 48 Electrical Engineering: Graded Unit 2 Project (2 credits) --- --- --- --- --- Mandatory Section Assessment Summary: 16 Written Question Papers (Total assessment time = 27 hours 40 mins) + Graded Unit 1 (Total assessment time 3 hours) + 17 Assignments + Graded Unit 2 (2 credit project) SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 50 SQA Advanced Diploma in Electrical Engineering optional units Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HV2L 47 Inspection and Testing of Low Voltage Electrical Installations Written Question Paper 1 hour 30 mins Practical Testing and Certification Assignment --- HT1K 47 Application of Programmable Logic Controllers Written Question Paper 1 hour 30mins PLC Simulated Assignment --- HV3K 47 Electrical Systems in Potentially Explosive and Gas Hazardous Environments Written Question Paper 1 hour Written Question Paper 1 hour HT7J 46 Analogue Electronics: An Introduction Written Question Paper 1 hour 30 mins Practical Assignment 2 hours 30 mins HT7L 47 Digital Electronics Written Question Paper 2 hours Practical Assignment 2 hours HT7A 47 Quality Management: An Introduction Written Question Paper 1 hour Case Study Assignment --- Case Study Assignment 1 hour HV3M 47 Electrical Installation Skills Identification/ Application Assignment --- Practical Assignment --- Practical Assignment --- HV2K 47 Industrial Plant Maintenance Written Question Paper 1 hour 30 mins Maintenance Plan Assignment --- HP41 47 High Level Engineering Software Log/Portfolio Assignments --- HR1D 47 Employment Experience 2 Portfolio Assignments --- SQA Advanced Certificate and Diploma in Electrical Engineering Group Award Specification: SQA Advanced Certificate (GP6C 48) and Diploma (GP6D 47) in Electrical Engineering 51 SQA Advanced Diploma in Electrical Engineering optional units (continued) Product Code Product title Assessment 1 Assessment 2 Assessment 3 Type Time Type Time Type Time HV51 48 Control Systems Behaviour Written Question Paper 1 hour Simulated Control Assignment 6 hours HT1E 48 Mathematics for Engineering 3 Written Question Paper 2 hours 30 mins HP3T 48 Power Supply Circuits Written Question Paper 1 hour 30 mins Practical Assignment --- HV4V 48 Switchgear and Protection of High Voltage Systems Written Question Paper 2 hours Assignment Report --- HV50 48 Applications of Power Electronics in Electrical Motor Drive Systems Written Question Paper 1 hour 30 mins Assignment Report --- HV3G 48 Three Phase Induction Motors Written Question Paper 2 hours Assignment Report --- HV4W 48 Synchronous Machines Written Question Paper 2 hours HV53 48 Electrical Standby Systems Written Question Paper 2 hours HV52 48 Electrical Installation Design: Computer Aided Design Assignment --- On Mon, Jul 1, 2024 at 3:57 PM tshingombe fiston wrote: Skip to content Skip to main navigation Skip to sub 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SQA Advanced Diploma • HNC Electrical Engineering • One Higher from Physics, Engineering Science or Higher Mathematics and at least three National 5s including Mathematics, Physics/Engineering Science and English. • National Certificate Group Award in Electrical Engineering or Electronic Engineering (SCQF level 5 plus additional maths or SCQF level 6 award) • Qualification comparable to the above, gained through other awarding bodies. Progression The SQA Advanced Certificate in Electrical Engineering can progress to the SQA Advanced Diploma in Electrical Engineering. The SQA Advanced Diploma in Electrical Engineering can provide advanced entry to degree-level study. Offer this qualification Centres with devolved authority for approval should use their own internal approval process. Centres without devolved authority require to come forward for approval and should contact SQA's Business Development Team for guidance. Assessors and verifiers must be able to meet SQA's general requirements for technical/occupational competence as outlined in the Systems and Qualification Approval Guide. How to assess Each individual unit specification gives detailed information on the evidence requirements and approaches to assessment for each unit. Ongoing course assessment will apply. Assessment/e-assessment support packs are available for this qualification. Qualification structure SQA Advanced Certificate in Electrical Engineering Group award code: GP6D 47 (96 SCQF credit points) SQA Advanced Certificate in Electrical Engineering at SCQF level 7 consists of 9 mandatory units. SQA Advanced Diploma in Electrical Engineering Group award code: GP6C 48 (240 SCQF credit points) SQA Advanced Diploma in Electrical Engineering at SCQF level 8 consists of 21 mandatory units. For further information on the structures and units of these qualifications please refer to the group award specification. Group award specification • Group Award Specification (630 KB) Unit Specifications • Analogue Electronic Principles (HP47 SCQF level 7) • Analogue Electronics: An Introduction (HT7J SCQF level 6) • Application of Electrical and Electronic Instruments (HV2H SCQF level 6) • Applications of Power Electronics in Electrical Motor Drive Systems (HV50 SCQF level 8) • Applications of Programmable Logic Controllers (HT1K SCQF level 7) • Business Awareness and Continuing Professional Development (HP3H SCQF level 8) • Communication: Practical Skills (HP4A SCQF level 7) • Computer Programming (J1CH SCQF level 7) • Control Systems Behaviour (HV51 SCQF level 8) • DC and AC Principles (HP46 SCQF level 7) • Data Security (J1S1 SCQF level 7) • Digital Electronics (HT7L SCQF level 7) • Electrical Design Systems: An Introduction (HV2W SCQF level 7) • Electrical Engineering: Graded Unit 1 (HV4C SCQF level 7) • Electrical Engineering: Graded Unit 2 (J1RC SCQF level 8) • Electrical Installation Design (Computer Aided): An Introduction (HV2X SCQF level 7) • Electrical Installation Design (HV5X SCQF level 8) • Electrical Installation Design: Computer Aided (HV52 SCQF level 8) • Electrical Installation Skills (HV3M SCQF level 7) • Electrical Machine Principles (HT83 SCQF level 7) • Electrical Motor Drive Systems (HT7M SCQF level 8) • Electrical Networks and Resonance (HP3J SCQF level 7) • Electrical Safety (HV3A SCQF level 7) • Electrical Standby Systems (HV53 SCQF level 8) • Electrical Systems in Potentially Explosive and Gas Hazardous Environments (HV3K SCQF level 7) • Electricity Power Systems (HV3L SCQF level 7) • Employment Experience 2 (HR1D SCQF level 7) • Energy Overview (HT1Y SCQF level 7) • Energy Technologies (HT1L SCQF level 8) • Engineering Mathematics 1 (HP48 SCQF level 6) • Engineering Mathematics 2 (HP49 SCQF level 7) • Engineering Mathematics 3 (HT1M SCQF level 7) • Engineering Mathematics 4 (HT03 SCQF level 8) • Engineering Mathematics 5 (HT1N SCQF level 8) • Fundamentals of Control Systems and Transducers (HT1R SCQF level 7) • High Level Engineering Software (HP41 SCQF level 7) • Industrial Plant Maintenance (HV2K SCQF level 7) • Information Technology: Applications Software 1 (HP6L SCQF level 7) • Inspection and Testing of Low Voltage Electrical Installations (HV2L SCQF level 7) • MCU/MPU Assembly Language Programming (HP42 SCQF level 7) • Mathematics for Engineering 3 (HT1E SCQF level 8) • Personal Development Planning (HP6M SCQF level 7) • Power Electronics (HT1W SCQF level 7) • Power Supply Circuits (HP3T SCQF level 8) • Project Management (HT7H SCQF level 7) • Promoting Energy Efficiency in the Workplace (J1PL SCQF level 7) • Quality Management: An Introduction (HT7A SCQF level 7) • Sequential Logic (HP3Y SCQF level 7) • Switchgear and Protection of High Voltage Systems (HV4V SCQF level 8) • Synchronous Machines (HV4W SCQF level 8) • Three Phase Induction Motors (HV3G SCQF level 8) • Three Phase Systems (HT7K SCQF level 7) • Transformers (HV4X SCQF level 8) • Transmission Lines and Complex Waves (HT1H SCQF level 8) • Utilisation of Electrical Energy in Buildings (HV4Y SCQF level 8) • Work Role Effectiveness (2003) (HR0M SCQF level 7) • Work Role Effectiveness (2003) (HR0P SCQF level 8) • Workplace Communication in English (HR1C SCQF level 6) Related Information • SQA Advanced Qualifications catalogue (233 KB) • Choosing appropriate Assessor and/or Verifier qualifications outside the UK (146 KB) • Skills for English: SELT (secure English language test) • Compare qualification systems (UK and Europe) • Become an SQA Progression Partner Contact Information • Candidate enquiries • 0345 279 1000 • Centre enquiries • 0303 333 0330 • +44 (0) 141 500 5030 SQA Advanced Qualifications • SQA Advanced Qualifications home • Courses • Unit search • PDAs (international/RoUK) • About SQA Advanced Qualifications • Notification of changes • Assessment support materials • Past papers • Replacement Certificates • SQA careers • Media Enquiries • MyAlerts • Contact us • SQA Accreditation • SQA Blogs • MySQA • SWQR • Understanding Standards • Ushare Cookies Privacy Statement Accessibility Gàidhlig Terms & Conditions Procurement Modern Slavery Act On Mon, Jul 1, 2024 at 3:56 PM tshingombe fiston wrote: • Home • SQA Advanced Certificates and Diplomas > Subjects > Engineering, Electronics, Maritime and Nautical > SQA Advanced Certificate/Diploma Electrical Engineering SQA Advanced Certificate/Diploma Electrical Engineering SQA Advanced Certificate and SQA Advanced Diploma qualifications provide practical skills and theoretical knowledge that meet the needs of employers. 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Typically, an SQA Advanced Certificate takes one year to complete and an SQA Advanced Diploma takes two years. Use the tabs below to open each section individually. Alternatively you can show all the sections. Why deliver this qualification Who does this qualification suit Progression Offer this qualification How to assess Qualification structure Group award specification Unit Specifications On Mon, Jul 1, 2024 at 3:46 PM tshingombe fiston wrote: On Mon, Jul 1, 2024 at 3:26 PM tshingombe fiston wrote: On Mon, Jul 1, 2024 at 3:14 PM SQA wrote: Hello tshingombe, Thank you for submitting an enquiry following your interest in Technical and vocational education and training (TVET). The following details have been sent: Name: tshingombe tshitadi Business name: tshingombe Email: tshingombefiston@gmail.com Phone: 0725298946 Service Required: Technical and vocational education and training (TVET) Country: South Africa Identifier: 8069641 This email message was auto-generated. 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